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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1983

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841

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

SECOND SESSION

SUBCOMMITTEE ON THE DEPARTMENT OF DEFENSE

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PART 7

	Page
Strategic Airlift	1
Research and Development Technology Base	161
Chemical Warfare Programs	261
B-1 Cost Estimates (General Accounting Office)	327
Navy's Management of Defective Government-furnished Equipment (General Accounting Office)	351
Strategic Manned Bomber and Related Weapons	381
Ammunition Programs	455
Multi-year Procurement:	
General Accounting Office	573
Department of Defense	597
Reprogrammings, Fiscal Year 1982	689

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1983

WEDNESDAY, JUNE 9, 1982.

DEPARTMENT OF DEFENSE STRATEGIC AIRLIFT

WITNESSES

FRANK C. CARLUCCI, DEPUTY SECRETARY OF DEFENSE
GEN. LEW ALLEN, USAF, CHIEF OF STAFF, U.S. AIR FORCE
LT. GEN. KELLY H. BURKE, USAF, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, U.S. AIR FORCE
GEN. PAUL X. KELLEY, USMC, ASSISTANT COMMANDANT, U.S. MARINE CORPS
LT. GEN. R. H. THOMPSON, USA, DEPUTY CHIEF OF STAFF FOR LOGISTICS, U.S. ARMY
VICE ADM. WILLIAM J. COWHILL, USN, DEPUTY CHIEF OF NAVAL OPERATIONS-LOGISTICS

INTRODUCTION

Mr. ADDABBO. The committee will come to order.

Today, the committee will hold hearings on the strategic airlift needs of the DOD. In the past few years, the DOD had intended to enhance its strategic airlift capacity through three programs:

Improving presently operational aircraft by "stretching" the C-141, and modifying the C-5 wings.

Developing and procuring a new airlift aircraft referred to as the "C-X" or "C-17".

Proceeding with the CRAF—Civil Reserve Air Fleet—program, which would modify presently operational wide-bodied civilian aircraft so they could be used by the military in emergencies.

For various reasons, two of these programs—the CRAF program, and C-X—are not considered viable options to significantly enhance DOD's airlift capabilities at this time.

The DOD now intends to procure:

Fifty C-5B aircraft at a total procurement cost of $8.8 billion, or $177 million per airplane. The total "program acquisition cost" is estimated at $9.1 billion or $182 million per aircraft. The "program acquisition cost" includes $249 million for "Military Construction."

DOD intends to procure 44 KC-10s at a total procurement cost of $3.2 billion, or $73.5 million per aircraft.

Thus, the total estimated procurement cost of these two programs is $12.3 billion.

In addition, the Air Force estimates that:

"Operation and Support" costs for the 50 C-5s will be $8.8 billion.

"Operation and Support" costs for the 44 KC-10s will be $3.0 billion.

Thus, the "life cycle costs" for these 94 planes is $24.1 billion.

Today, the committee will cover issues such as:

The urgency and role of strategic airlift in DOD's overall priorities.

The impact of the airlift alternatives on attaining DOD's objectives for strategic airlift

The priority of airlift in the DOD's overall "mix" of airlift, sealift, and prepositioning equipment.

The committee will "revisit" some of the same issues covered in earlier hearings on the reprogramming and supplemental requests for the C-5B and KC-10 programs.

The committee has this hearing scheduled for the entire day. However, given the fact that various aspects of the issues have been covered rather extensively in recent reprogramming and supplemental hearings, and because we have a conference scheduled this afternoon for the urgent supplemental, we plan on concluding these hearings this morning.

Although this hearing is primarily on airlift alternatives, we have requested that a witness from the Navy be present since a few general questions on sealift will be asked.

The committee welcomes: Honorable Frank C. Carlucci, Deputy Secretary of Defense; General Lew Allen, Chief of Staff, U.S. Air Force; Lieutenant General Kelly H. Burke, Deputy Chief of Staff, Research, Development and Acquisition, U.S. Air Force; General Paul X. Kelley, Assistant Commandant, U.S. Marine Corps; Lieutenant General R. H. Thompson, Deputy Chief of Staff for Logistics, U.S. Army; and Vice Admiral William J. Cowhill, Deputy Chief of Naval Operations, Logistics, U.S. Navy.

General Allen, General Burke, this may or may not be your last appearance before the committee. We regret hearing of your retirement. It is a great loss to the Service. You have been formidable opponents across the table, but great proponents for the Air Force and for the needs of our military.

It has been a great privilege working with you, and we wish you well in your retirement, and I know your retirement will be a loss to the Air Force and to our military, but hopefully you will be around and we can call upon your expertise.

General BURKE. Thank you, sir.

Mr. ADDABBO. Mr. Secretary?

Mr. CARLUCCI. Thank you, Mr. Chairman.

With your permission we have statements which we will submit for the record, and I would ask your indulgence for a few minutes while I and my colleagues briefly summarize our statements.

Mr. ADDABBO. Your entire statements will be included in the record.

SECRETARY CARLUCCI'S OPENING COMMENTS

Mr. CARLUCCI. Mr. Chairman, I think it is fair to say that as we went through the fiscal year 1983 budget, we came to the conclusion—a unanimous conclusion—that improving mobility is the single most important priority for our military establishment. We view it as the key to achieving greater military flexibility.

Our mid-term objective is to be able to deploy forces to the Persian Gulf and reinforce Europe and key positions in the Western Pacific.

To do this we require a balanced program of airlift, sealift, and prepositioning. Our proposal encompasses all three. We would add 17 million ton miles per day of airlift capability. In the sealift area we would convert eight SL-7s to RO/RO configuration, expand the Ready Reserve Fleet, and improve our ability to unload cargo in areas where modern port facilities are not available.

We would move ahead with additional prepositioning in Europe and Southwest Asia.

In terms of the airlift we need we reported to Congress on our requirements in the Congressionally Mandated Mobility Study with which most of you are familiar. This study examined four scenarios typical of our requirements. It recommended adding 25 million ton miles per day of capacity, of which at least 10 million should be for outsized cargo. The program we have presented to the Congress provides for 17 million ton miles per day, of which 8 million are for outsized cargo. We achieve this balanced capability through the purchase of 50 C-5s and 44 KC-10s, coupled with a new CRAF enhancement program.

Let me say just a word about the CRAF enhancement program. We did have some problems getting aircraft in 1982 which met our cost goals, but we are still enthusiastic about proceeding with the CRAF enhancement program. We view it as one of the most cost-effective means of getting oversized airlift.

Indeed, there are those who would have us acquire such cargo aircraft in the most expensive way, that is, by having us purchase them and having outright government ownership. The CRAF enhancement program would instead reimburse the airlines for the cost of conversion and operational penalties associated with the dual role of these aircraft. We would certainly be prepared to examine proposals from the airlines for an accelerated CRAF enhancement program if the Congress should choose to support this avenue.

There is a proposal, of course, from Boeing, which would have us buy 747s instead of the C-5s and the KC-10s. Let us concede at the outset that this proposal is less costly, although not to the degree that Boeing claims. The full costs to the government, we think, are fully one-third higher than the figures that have been presented by Boeing over the life cycle of the aircraft.

We think the differential is somewhere in the neighborhood of two billion dollars. The problem is that this program is much less capable. As our Congressionally Mandated Mobility Study demonstrated, we face an outsize constraint in meeting our military deployment requirements.

Our models show that even if we committed all of our C–5s to outsized cargo, this would still leave us 50 percent short of the aggregate outsized demand over the first 20 days in the four CMMS scenarios. The 747 is not an outsized cargo airlifter. Our view is that the President's program, with its mix of C–5s, KC–10s, and CRAF enhancement, is a flexible, cost-effective, and near-term solution to our serious inter-theater airlift shortfall.

[Mr. Carlucci's prepared statement follows:]

STATEMENT BY

THE HONORABLE FRANK C. CARLUCCI, III

Improving this nation's ability to deploy forces rapidly, to wherever they are needed, is one of this Administration's primary goals. A robust airlift force is the key to such a capability, because only airlift has the speed and flexibility to respond quickly to unanticipated situations. I am therefore pleased to testify in behalf of the Department's airlift programs. I will outline the program we are proposing, and its rationale. The Air Force testimony will provide additional details.

Airlift, Sealift, and Prepositioning Are Needed to Deploy Our Forces Effectively

Before I describe our airlift proposals, let me briefly review our overall mobility goals and programs.

Our long-term mobility goals recognize that we must have the capability to respond in a conflict that might involve the Soviet Union. We cannot assume that such a conflict would be confined to a single theater of operations, even if we might attempt to do so.

Our mid-term objective is the ability to deploy forces to the Persian Gulf and then to reinforce Europe and key positions in the Western Pacific should a conflict spread. Although we treat this scenario in considerable detail for planning purposes, we must also ensure that our mobility forces have the flexibility to respond to other contingencies that we cannot anticipate.

Our program to achieve these objectives involves improvements to all three components of our mobility forces: airlift, sealift, and prepositioning.

In airlift, the five-year defense program proposes adding 17 million ton-miles per day of cargo capability to the fleet, and maximizing the capability of existing aircraft by procuring adequate spare parts. I will return to the airlift program we are proposing in just a moment.

In sealift, we propose converting all eight SL-7 fast container ships to a roll-on/roll-off configuration to take full advantage of their potential for deploying the Army's heavy forces. We are also continuing to expand the amount of sealift rapidly available to us in the Ready Reserve Fleet. Finally, we are improving our capability to unload cargo in areas where modern port facilities are not available.

We are also proposing extensive additions to our prepositioning programs. By prepositioning war reserves in key locations worldwide, we free airlift and sealift from the need to move large quantities of easily stored bulk cargo in the initial days of the deployment. In Southwest Asia, we are proposing additional shipboard prepositioning, and are seeking options for land-based storage as well.

Prepositioning unit equipment, in addition to war reserves, permits us to deploy units even more rapidly. In Europe, we plan to preposition equipment for two additional Army divisions and a brigade-sized Marine force. In Southwest Asia, we plan to store equipment for three brigade-sized Marine forces afloat on specially configured maritime prepositioning ships. The Air Force is also planning to store support equipment in both Europe and Southwest Asia.

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Prepositioning partial sets of equipment can reduce the airlift needed to move these units by about 90%. Much of the residual equipment that must be moved by air is composed of outsize items that do not store easily.

All three programs - airlift, sealift, and prepositioning - must proceed in parallel. Without adequate airlift, our prepositioning is to no avail. Without adequate prepositioning and airlift to deliver initial defensive forces, sealift may have no place to unload. Without rapidly responsive sealift, our initial forces may be overrun.

Both Outsize and Oversize Enhancements Are Needed for Our Airlift Force

Now let me turn to the specifics of our airlift program.

Our goal for additional airlift is based on the Congressionally-Mandated Mobility Study (CMMS). That study examined four potential scenarios and concluded that additional airlift, sealift, and prepositioning were needed in every case. Although none of those scenarios corresponds precisely to the scenario used to develop our mid-term mobility objective, they are sufficiently similar that we find that the programs CMMS recommended are appropriate for achieving our objective as well.

For airlift, CMMS recommended the addition of 25 million ton-miles per day of cargo capability, at least 10 million ton-miles per day of which would be for outsize cargo.

In recent weeks, questions have been raised about the validity of the outsize cargo requirement. Those questions are based on the contention that the existing C-5 fleet could meet our outsized cargo movement requirements. We do not accept that contention. Our calculations show that, even if it were dedicated to the movement of outsized cargo, the existing C-5 fleet could not meet requirements in any of the CMMS scenarios. Totally committing the C-5 force to carrying outsize cargo would still leave us well over 50% short of the aggregate outsize cargo demand over the first 20 days in the four CMMS scenarios.

Furthermore, if we dedicate the C-5s to outsized cargo then we cannot deploy forces as rapidly as possible in the order requested by the theater commander. Consequently, we believe that outsize capability must comprise a considerable part of our added 25 million ton-miles per day if we are to maintain a balanced airlift capability.

To achieve a balanced capability, our airlift program has four components. Besides the C-5s and KC-10s, which have been widely discussed, we have also reserved funds beginning in 1984 for additional oversize airlift. Our funding is structured for a revitalized CRAF Enhancement program with approximately $850 million reserved in FY 1984-87. But other alternatives are also being examined. One of these would advance a modest amount of the FY84-87 CRAF Enhancement funding to FY1983, and thus exploit the apparent availability of domestically owned wide-body passenger aircraft for cargo conversion. Candidates for such an acceleration would include some of the 747s Boeing has mentioned, most of which are already part of the CRAF passenger program and thus part of our airlift fleet. Boeing would convert these to a cargo configuration in the most expensive possible manner - by requiring outright government ownership. The CRAF Enhancement Program would, instead, reimburse the airlines for the cost of conversion and for the operational penalties associated with the dual role of these aircraft. We are prepared to consider the acceleration of this program, due to begin in FY1984 in any event, if that is the desire of the Congress.

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Collectively, we estimate that these three programs - C5s, KC-10s, and CRAF Enhancement - will add 17 million ton-miles per day of capability toward our goal of 25 million ton-miles per day.

For the final component of our overall airlift program, we plan to use the remaining funds in the C-X program to continue C-17 R&D. This will preserve the option of developing the C-17 for procurement in the late 1980s and the 1990s to provide the remainder of the 25 million ton-miles per day of capability recommended by CMMS, and perhaps to replace some of our existing aircraft when they reach the end of their service lives. The C-17 would also provide greater capability for intratheater movement of outsize cargo.

The Boeing Proposal Does Not Meet Our Requirements

As I noted earlier, critics of our program have charged that additional C-5 aircraft are not needed and wide-bodied commercial freighters could be acquired at lower cost and more quickly. Specifically, the Authorization Bill recently passed by the Senate would have us buy used, wide bodied commercial aircraft and convert them to freighters rather than buying new C-5s. I wish it were possible to recommend this proposal. There certainly are many good uses to which the funds thus saved could be put. Unfortunately, we do not believe that total reliance on commercial aircraft for our entire increase in airlift over the next five years is a wise course.

In reaching this conclusion, we have considered costs, performance, and the uncertainties that confront us in the real world. Let me take each of these in turn.

There is no denying that used, commercial aircraft would cost less than C-5s. The savings, however, are much smaller than has been suggested. When the full costs to the government are considered, we find that the total cost of outright ownership of commercial aircraft would be at least a third higher than reported. CRAF Enhancement is a much more cost-effective way to add commercial cargo aircraft to our fleet - and we're already planning to do that, although you may wish to insist that we accelerate the program.

Is the C-5's added cost justified by its performance? One of the strongest advantages of airlift is its ability to deliver initial defensive forces and their critical support before even the fastest sealift can arrive. If we compare the performance of the DoD program with a commercial freighter alternative during this initial period in each of the CMMS scenarios, we find that the DoD program is considerably better at deploying Army and Marine Corps forces. This result is particularly striking should we need to reinforce Europe subsequent to a Persian Gulf deployment. In that case, we find that the DoD program provides at least a third more capability to deliver Army or Marine units than the commercial alternative.

Moreover, as we expand our airlift program, we find that inadequate outsize capacity is the binding constraint. Put quite simply, this means we will not be able to meet our military requirements without additional outsize capability.

I have already argued that the near-term improvements are well worth the cost, quite apart from the absolute, longer-term requirements for additional outsize capability. But let me note one further point of great importance.

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We probably will not finish adding 25 million ton-miles per day of airlift before the early 1990s. In the interim, a wide variety of contingencies may occur in which we would be called upon to use our mobility forces. We cannot be sure what the precise demands of those situations will be in terms of outsize versus oversize cargo. Consequently, the more flexible our airlift fleet, the better prepared we will be. The C-5, with its ability to carry the full range of military equipment provides just such flexibility.

In short, Mr. Chairman, we believe the program we're proposing is the most cost-effective alternative. It is badly needed to enhance the capability of our conventional forces. I urge the Congress to approve it.

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GENERAL ALLEN'S OPENING COMMENTS

Mr. ADDABBO. General Allen?

General ALLEN. Thank you, Mr. Chairman. I will make a comment or two.

I presume General Kelley, of the Marines, will also make a comment or two. General Burke is prepared to give a short briefing on the analysis of the comparisons of the aircraft and some of the factors that apply.

I don't know whether you want that now or later, but in any event he is prepared to summarize it or comment on it as you see fit.

Let me simply say that I am here to support Mr. Carlucci in this action. It is clear to me that the U.S. has to have competent combat forces in the U.S. which can be moved to those places in the world where it might be necessary for us to confront the Soviet Union. The ready status of the Soviet forces in a number of those places is such that the warning times can be very short.

Therefore, mobility and rapid reinforcement of forward-deployed forces is essential to the country's security. We have done many studies over the years of the needs for that deployment, capability, and for the reinforcement of our forces versus the capabilities. We included sealift, prepositioning, and airlift in all of the studies. Every one of them shows that additional airlift is required and that the need is urgent.

Our present operations include tactical airlift, 130s, 141s, which are oversized and have a wide range of military capabilities, but not outsized, the C–5 aircraft that are presently in the inventory, and the CRAF program, which is adequate for our passenger carrying during wartime and adds to our cargo capability during wartime.

As we weighed those capabilities against the needs for airlift, the conclusion has been that of the needs that we have identified—and there are several—we need to have improved intra-theater capability for oversized cargo and we need other kinds of improvements, including improvements in CRAF. But of all of these, we decided that the most urgent is inter-theater, that is, strategic airlift, and that that airlift should have an outsized capability.

We have considered the alternatives of the aircraft that are available, and we are convinced that the President's program, which was submitted, represents a sound and cost-effective approach to what is, in fact, an urgent need.

I am here to support that.

Mr. ADDABBO. Thank you very much, General.

General Kelley?

GENERAL KELLEY'S OPENING COMMENTS

General KELLEY. Mr. Chairman, I would like to make a few remarks, basically as a combat commander; in other words, as the user, prime user, of strategic airlift.

I believe we have, for the first time to my recollection, a strategic airlift program which represents a solid consensus between all elements of our military: Army, Navy, Air Force, and Marine Corps.

It is a program, Mr. Chairman, which carries us a long way, a very long way toward redressing our critical shortage of strategic airlift.

Of equal, and probably more importance to the battlefield commander, we have a solid, no-risk program which improves significantly the numbers of aircraft capable of moving outsize combat equipment. No one—and I truly mean no one—could ever responsibly suggest that a mere 77 C–5 aircraft could satisfy the myriad demands to move outsize combat equipment when faced with the possibility of a global conflict with the Soviet Union.

This is not a professional opinion, Mr. Chairman. I believe that is a fact!

The issue appears to be the Boeing 747 commercial aircraft and whether or not it is a reasonable substitute for the C–5, a military aircraft. I must stipulate right at the beginning that when employed on missions for which it is designed, let there be no doubt about my profound respect for the capabilities of the Boeing 747. But to me as an infantryman, and as a combat commander, the analogy is fairly simple. If I want to move people, I hire a Greyhound bus. If I want to move my grand piano, I hire a moving van. That is, unless I want to strip the grand piano piece-by-piece in order to fit it in a Greyhound bus, and then have divisions of people at the other end working, conceivably under combat conditions putting it together piece-by-piece.

Mr. DICKS. Will the Chairman yield?

Mr. ADDABBO. Not at this point.

General KELLEY. The price we may have to pay, Mr. Chairman, is human lives. I would like to say: to me, that is unacceptable. As a battlefield commander, Mr. Chairman, I want combat equipment available immediately to cope with any eventuality. I want air defense systems, air control equipment, armored personnel carriers, helicopters, just to name a few, to be there when I need them and to not have all of those people there trying to put this very complex puzzle together, and possibly, as I mentioned, under combat conditions.

The bottom line, I believe, is simple. Do we or do we not satisfy the validated requirements of our military to win on a future battlefield? Unfortunately, Mr. Chairman, the penalty for making the wrong choice may well be the lives of countless young Americans.

The correct decision, the decision which I believe will strengthen our military capabilities and flexibility to deploy combat power in a very uncertain world is to support the President's program for strategic airlift. It is a responsible program that has as its basic foundation the input of field commanders.

Thank you very much, Mr. Chairman.

Mr. CARLUCCI. Mr. Chairman, before we turn to General Burke I wonder if General Thompson could make a brief statement from the standpoint of the Army?

Mr. ADDABBO. General Thompson?

GENERAL THOMPSON'S OPENING REMARKS

General THOMPSON. Mr. Chairman, I am pleased to appear before this committee to present the Army's views on airlift. As the prin-

cipal user we depend upon airlift to deploy and sustain our combat and support forces whenever and wherever needed. Airlift is the cornerstone of strategy during the early days of deployment. It provides a rapid and selective buildup of combat power over a wide variety of conditions. In many areas of the world, airlift is the only means available for the early introduction of Army forces.

In any non-NATO contingency, the requirement to secure airfields, lines of communication, and conduct offensive or defensive operations, can only be satisfied by airlift. The Army depends upon airlift to deploy and sustain units until sealift takes effect, which may range from about 30-to-40 days in a non-NATO contingency to 15-to-20 days in Europe.

Airlift is absolutely essential to the rapid transport of critical supplies, replacements, and forward deployment of major combat units in the area of operations. Although force composition and equipment requirements vary with the scenario, there are several important principles associated with unit deployments. The first is the need for a balanced force, one that contains an appropriate percentage of combat and support forces. An improper force mix makes no tactical sense, and reduces the operational flexibility of commanders.

Another is the need to maintain a high degree of unit integrity in order to facilitate employment in the combat zone. I believe that the airlift shortfall has been clearly and accurately articulated. Its impact upon closure times in the various scenarios is of concern to our Army. The need for outsized airlift is particularly acute and limits our responsiveness and flexibility.

I believe it is important that airlift capability, especially outsize, be greatly improved. For this reason, we ask your support for the airlift programs before this committee.

Mr. ADDABBO. Before we recognize General Burke, I have one general question, and then it would be my intention, if there is no objection, to yield 10 minutes to the gentleman from Washington, Mr. Dicks, and 10 minutes to the gentleman from Georgia, Mr. Ginn, and then we will return to our normal procedure of five minutes and 10 minutes for each Member.

Is that all right?

Mr. EDWARDS. Sure.

NATIONAL SECURITY DECISION MEMORANDUM

Mr. ADDABBO. Mr. Secretary, the President's National Security Adviser, Judge Clark, recently gave a speech in which he outlined a "refinement" of the military strategy formulated thus far by the administration. This "refinement" is detailed in an 8-page "National Security Decision Memorandum" recently signed by the President. Articles describing the speech included the following comments:

> In essence, the document established priorities for the use of American military power in the event of a global war with the Soviet Union.
>
> Among the Weinberger doctrines modified by Mr. Reagan's action is the Secretary's concept of preparing the United States to fight a protracted conventional war with the Russians on all fronts.

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Have you re-evaluated DOD's total airlift needs in light of this recent modification of strategy? If so, what were the results?

Mr. CARLUCCI. Mr. Chairman, the press reports attempting to portray some difference between what Judge Clark said and the Defense guidance put out by the Secretary are completely misleading. In fact, we participated actively in the process that led to the President's decision and the statement presented by Judge Clark is fully consistent with the strategy that was used as a basis for formulating our budget; so we had no reason whatsoever to re-evaluate our program in light of Judge Clark's statement. In fact, we think the statement underscores the need for greater power projection capability and more substantial mobility forces, including strategic airlift.

Mr. ADDABBO. There is at present no re-evaluation of the airlift necessities other than what you have testified to this morning?

Mr. CARLUCCI. No. Including Judge Clark, we firmly believe the program we have set forth is badly needed for the country's defenses.

Mr. ADDABBO. The chair recognizes at this time the gentleman from Washington, Mr. Dicks, for 10 minutes.

AIR FORCE BRIEFING ON AIRLIFT

Mr. DICKS. For illustration purposes, I want to show the committee—this is the list of all the outsized equipment that has to be moved. Of that list, this much is combat equipment; only that much. All the rest of this is things like vans, jeeps, trucks, bakery equipment, mixers, things of that nature.

This, on the other hand, is a list of all the outsized and oversized equipment that can be moved on the 747-F. I think it is important to get that in perspective. Here are all the things that we can move on the 747-F. Here is the combat equipment that we are talking about on outsized. The rest of this is noncombat equipment.

I think we ought to get that into some perspective.

I would like to ask Mr. Carlucci: I am mystified—in fact, I am very deeply concerned about the decision that was made on this airplane in the first instance. I think a number of us in this Congress feel that the airplane we should be buying for outsized that deals with intra-theatre and inter-theatre requirements is the C-17, and, in fact, in January of this year, to talk about this great unanimity of opinion that General Kelley talks about, there was a briefing given to you by the Air Force, by Secretary Orr. I have a copy of that briefing and would like to place it in the record at this point.

[The information follows:]

PURPOSE

- REVIEW MOBILITY REQUIREMENT AND SHORTFALL
- EVALUATE MILITARY UTILITY AND COST EFFECTIVENESS OF POTENTIAL AIRCRAFT CANDIDATES
- RECOMMEND AN AIRLIFT PROGRAM

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MOBILITY STUDIES

- 150 STUDIES
- 17 MAJOR STUDIES IN LAST 7 YEARS
- ALL REVEAL SHORTFALL OF AIRLIFT
- MOST RECENT - CMMS (1981)
  - RECOMMENDATION: 20M TON MILES PER DAY ABOVE 1986 BASELINE

96-942 O - 82 - 2

FUNDING

- AIRLIFT CLEARLY INADEQUATE
- DOLLARS AVAILABLE MORE IMPORTANT
  - LIMITED AIRLIFT FUNDING ($5 BILLION FY81 DOLLARS)
    - DRIVES ONE ANSWER
  - PROGRAMMED AIRLIFT FUNDING ($15 BILLION FY81 DOLLARS)
    - DRIVES ANOTHER ANSWER

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MOBILITY DRIVERS

- NUMBERS OF THEATERS OF WAR
  - NATO - SWA - BOTH
  - WAR WIDENING MAY INCREASE NEED
  - BALANCE OF AIRLIFT/SEALIFT/ PREPOSITIONING REQUIRED
- SPEED
  - WARNING TIME
  - EARLY DECISION
- POMCUS
  - ONLY 94% WHEN COMPLETE
  - TO PREVENT DESTRUCTION
    - NEED IMMEDIATE AIRLIFT - PERSONNEL/ 6% OF EQUIPMENT (HELICOPTERS, AIR DEFENSE ARTILLERY, RADARS, GUIDED MISSILES, ETC)
  - IF POMCUS IS NOT FILLED OR SOME IS DESTROYED
    - AIRLIFT NEEDS INCREASE
- ARMY & MARINE EQUIPMENT
  - OUTSIZE GROWING

AIRLIFT FORCE MIX COMPARISON
(MAJOR AIRFIELD TO MAJOR AIRFIELD)
(DIRECT DELIVERY NOT CONSIDERED)
(FY 81 $B)

AIRCRAFT MIXES	173 C-17	134 C-17 40 KC-10	134 C-17 32 B-747	137 C-5	110 C-5 40 KC-10	110 C-5 32 B-747
INITIAL OPERATING CAPABILITY	1988	1988 1984	1988 1985	1987	1987 1984	1987 1985
NEAR TERM COSTS (83-85)	2.5	3.4	3.4	2.5	3.4	3.4
DELTA TO BES (83-85)	+ .2	+1.1	+1.1	+ .2	+1.1	+1.1
ACQUISITION COST	17.9-15.8	17.6-15.8	17.7-15.9	15.4-14.3	15.3-14.3	15.4-14.4
20 YEAR LIFE CYCLE COST	41.8-39.7	40.8-39.0	41.9-40.1	44.5-41.2	43.3-40.5	44.4-41.6

NOTE: C-5 COSTS DO NOT INCLUDE ENGINEERING CHANGE ORDER OR MANAGEMENT RESERVE AT A MINIMUM OF 5% - APPROX $1B.

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COST CONCLUSIONS
ALL SIX OPTIONS

- NEAR TERM COSTS SHOW SOME ADVANTAGE TO SINGLE PURCHASE
- ALL OTHER COSTS
  - DELTA TO BES
  - ACQUISITION COST
  - LIFE CYCLE COSTS
  - NOT SUFFICIENTLY DIFFERENT TO INFLUENCE DECISION

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LIMITED FUNDS

- LOCKHEED FIRM PRICE
  - $4.2B + ADDS = $4.9B (1980 $)
    ($7.9B TY $)
- BUYS 44 AIRCRAFT (PAA)
- FAR LESS AIRLIFT THAN NEEDED
- DOES NOTHING FOR AGING C-130S AND C-141S
- C-5N IS 1960's DESIGN
  - FAVORABLE PRICE ASSUMES FEW MODIFICATIONS

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CONTRACTUAL ARRANGEMENT COMPARISON

C-17	C-5N
ADVANTAGES	
● FIRM FIXED PRICE INCENTIVE FEE FOR FULL SCALE DEVELOPMENT AND INITIAL PRODUCTION LOT	● FIRM FIXED PRICE FOR FIRST 50
● FULL COST AND SCHEDULE VISIBILITY	
● FULLY WARRANTED RELIABILITY AND MAINTAINABILITY PARAMETERS AT THE SYSTEM LEVEL	
● FULLY WARRANTED ENGINE SPECIFICS INCLUDING SFC DECAY RATE	
● CONTRACT READY FOR EXECUTION	
DISADVANTAGES	
● BUDGETARY PRICING FOR AIRCRAFT ORDERS BEYOND INITIAL OPTION	● LIMITED COST AND SCHEDULE VISIBILITY (LOCKHEED PRICING PRESENTLY BASED ON NONE)
	● TENTATIVE AIRCRAFT PERFORMANCE SPECIFICATIONS LESS DEMANDING THAN ORIGINAL C-5A SPECIFICATIONS
	● NO ENFORCEABLE RELIABILITY OR MAINTAINABILITY WARRANTEES
	● NEGOTIATIONS REQUIRED TO ESTABLISH CONTRACT

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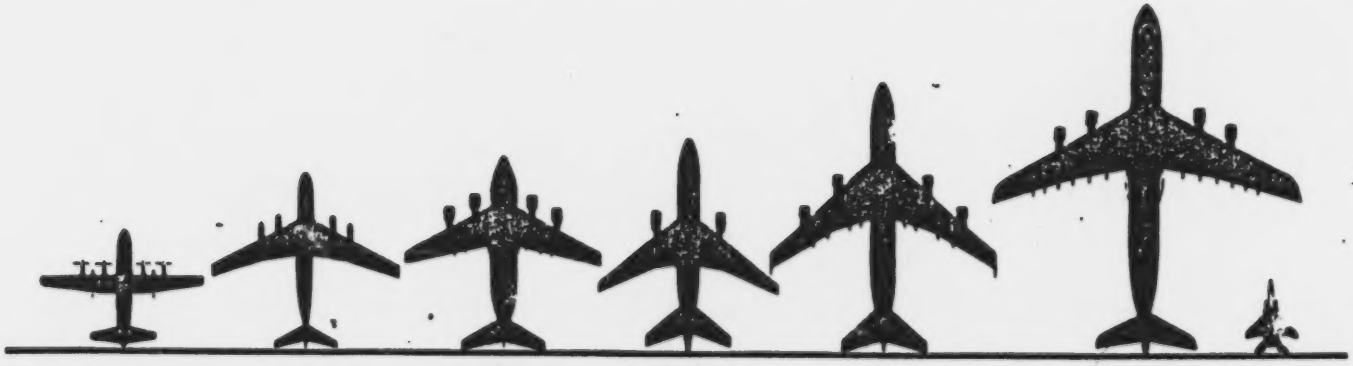
AIRCRAFT SIZE COMPARISON



C-130	C-141B	C-17	KC-10	747	C-5	F-15
100′	168′	171′	181′	223′	248′	64′

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MISSION CAPABILITY FACTORS

	C-5A	C-5N	C-17
MISSION CAPABLE RATE	60.1%	65.8%	82.5%
MAINTENANCE DOWN TIME/ SORTIE	14.5 HRS	12.4 HRS	5.7 HRS
MAINTENANCE MANHOURS/ FLYING HOUR	75.6 HRS	49.5 HRS	18.6 HRS

C-17 HAS

- HALF AS MANY FLIGHT CONTROL SURFACES AND ACTUATORS
- HALF AS MANY TIRES AND ONE-FOURTH THE LANDING GEAR ACTUATORS
- ONE-FOURTH AS MANY DOORS, RAMP TOES, RAMPS, AND SUPPORT JACKS
- ONE-FOURTH AS MANY ACTUATORS AND LIMIT SWITCHES
- ONE-TENTH AS MANY STEPS TO RIG CARGO DOORS
- ONE-FIFTEENTH THE TIME REQUIRED TO OPEN AND CLOSE DOORS (NO KNEELING)

MAINTENANCE MANHOURS /PER FLYING HOURS

IS IT REALISTIC?

C-130	C-141	C-5	C-17
23.7 HRS	25.1 HRS	75.6 HRS	18.6 HRS

MODERN AIRCRAFT DESIGNS REDUCE MAINTENANCE

- REMOVE AND REPLACE
- REDUCED PROGRAMMED DEPOT MAINTENANCE
- SIMPLIFIED SYSTEMS
- GREATLY INCREASED COMPONENT RELIABILITY

F-4	F-16	A-10	E-3A
32.5 HRS	18.3 HRS	10.5 HRS	19.6 HRS

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AIRLIFT CANDIDATE COMPARISON

	PROGRAM RISK	OUTSIZE CARGO	MHE COMPATIBILITY	GROUND MANEUVERABILITY	INTRATHEATER AIRLIFT	MAINTAINABILITY	MANPOWER DEMAND	MILITARY UTILITY
C-17	4	2	1	1	1	1	1	1
C-5N	3	1	2	2	2	4	4	2
B747	2	3	4	4	4	3	3	4
KC-10	1	4	3	3	3	2	2	3

RANK: 1 - BEST
THROUGH
4 - WORST

LONG TERM

- IF PROGRAMMED FUNDS FOR AIRLIFT ARE AVAILABLE
  - C-17 IS BY FAR BEST ANSWER
- ADDS INTERTHEATER AND INTRATHEATER CAPABLITY
  - AIRDROP/LAPES
  - AUSTERE AIRFIELD
  - COMBAT OFFLOAD
- MORE VERSATILITY ON ALL BASES INCLUDING MAIN OPERATING BASES
- PROVIDES OPTION TO REPLACE C-141S AND SOME C-130S

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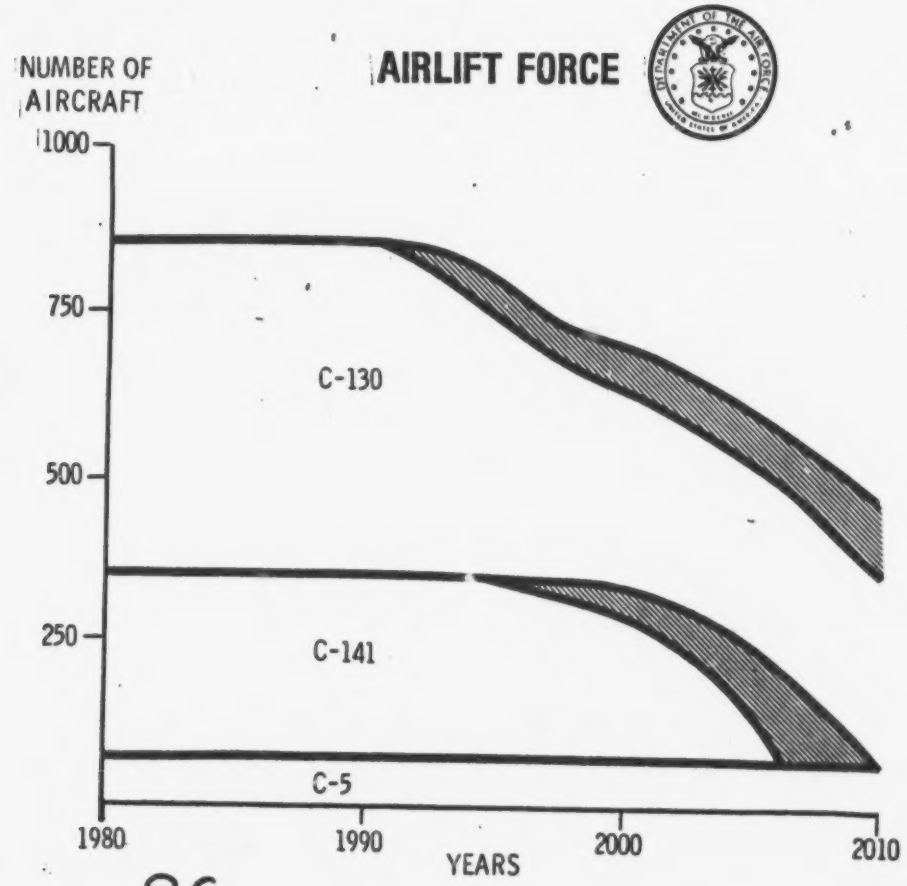

THE USER'S OPINION

CHIEF OF STAFF-US ARMY

"I BELIEVE THAT IT IS VITAL FOR THE AIR FORCE AND ARMY TO STAND FIRM ON THE C-X (C-17) SO WE CAN GET AN AIRLIFT AIRCRAFT THAT MEETS OUR WARTIME REQUIREMENTS."

GEN MEYER

CINC READINESS COMMAND

"THE C-17 IS THE ONLY AIRCRAFT THAT HAS BEEN PROPOSED THAT ADDRESSES OUR TOTAL AIRLIFT SHORTFALL, THE MOVEMENT OF OUTSIZE AND OVERSIZE COMBAT EQUIPMENT DIRECTLY TO AN AIRFIELD WHERE IT CAN BE QUICKLY BROUGHT TO BEAR ON THE ENEMY WITHOUT TRANSSHIPMENT."

GEN STARRY

CINC USAFE

"WE NEED AN AIRLIFTER THAT CAN OPERATE ROUTINELY INTO OUR COLOCATED OPERATING BASES DURING INTENSIVE FIGHTER OPERATIONS. THE NARROW TAXIWAYS, SMALL RAMPS, AND OFF-PAVEMENT OBSTRUCTIONS DICTATE THE C-17 AS THAT AIRCRAFT."

GEN GABRIEL

RDJTF COMMANDER

"IT SEEMS CLEAR THAT THE C-X (C-17) COULD MAKE THE DECISIVE DIFFERENCE IN A SOUTHWEST ASIAN CONFLICT. WITHOUT THE STRATEGIC AND TACTICAL FLEXIBILITY THIS AIRCRAFT CAN PROVIDE OUR TASK IS MONUMENTAL."

LT GEN KINGSTON

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LONG TERM RECOMMENDATION

- PURCHASE 134 C-17S (PAA)
- IOC 1988

SHORT TERM

- CRAF ENHANCEMENT
- KC-10
- B-747

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CRAF ENHANCEMENT PROGRAM

- STRENGTHENS FLOOR - ENLARGES DOOR
  - PERMITS BULK AND OVERSIZE
  - FACILITATES LOADING AND UNLOADING
  - OUTSIZE VERY LIMITED
- BASICALLY AN INSURANCE POLICY
  - CRAF III ACTIVATED ONLY IN NATIONAL EMERGENCY
- BID APPROXIMATELY $23-25M PER AIRCRAFT
  - BASED ON 16 AIRCRAFT ORDER
- REQUIRE 16 AIRCRAFT ORDER - $400M TO JUSTIFY COMMENCING
- TWELVE OF 16 AIRCRAFT OFFERED ARE DC-10-10S - LEAST CAPABLE
- CONTRACT FOR AIRCRAFT COVERS OPERATION FOR 16 YEARS BUT CARRIER MAY
  - WITHDRAW IN FIRST 8 YEARS AND REFUND PORTION OF MOD AND OPERATING COSTS
  - WITHDRAW IN SECOND 8 YEARS AND REFUND REMAINING SHARE OF OPERATING COSTS

96-942 O - 82 - 3

CRAF ENHANCEMENT

- ADVANTAGES
  - NO OPERATING CREWS, MAINTENANCE, O&S COST UNTIL NEEDED
  - ASSURES AVAILABILITY OF ENHANCED AIRCRAFT IN NATIONAL EMERGENCY
  - REDUCES ORGANIC CARGO CAPACITY REQUIRED DURING PEACETIME
- DISADVANTAGES
  - ACQUISITION AND OPERATING COST IS ALMOST ONE-HALF OF ACQUIRING A NEW AIRCRAFT
  - OFFERS NO UTILITY UNLESS, NATIONAL EMERGENCY (CRAFT III)
  - AIRCRAFT MAY BE WITHDRAWN PRIOR TO CONTRACT TERM

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KC-10 MIX FACTORS

- NEAR TERM AVAILABILITY
- SIDE DOOR OPENING
  - BULK - OVERSIZE CAPABILITY
- PRICE
  - FAVORABLE CONTRACT $55M (FY $ 81)
- MAY BE USED AS TANKER OR DUAL USE- TANKER/CARGO
- INDUSTRIAL BASE
- LONGER LEGS/MORE CARGO THAN CRAF DC-10-10
- REQUIRES OPERATING AND SUPPORT COSTS

B-747 MIX FACTORS

- NEAR TERM AVAILABILITY
- NOSE AND SIDE OPENING
  - BULK-OVERSIZE CAPABILITY
- PRICE
  - DEPRESSED MARKET
  - AIRCRAFT AND SPARES 72M (FY $ 81)
- SEMI KNEELING CAPABILITY FOSSIBLE
  - AT ADDITIONAL COST

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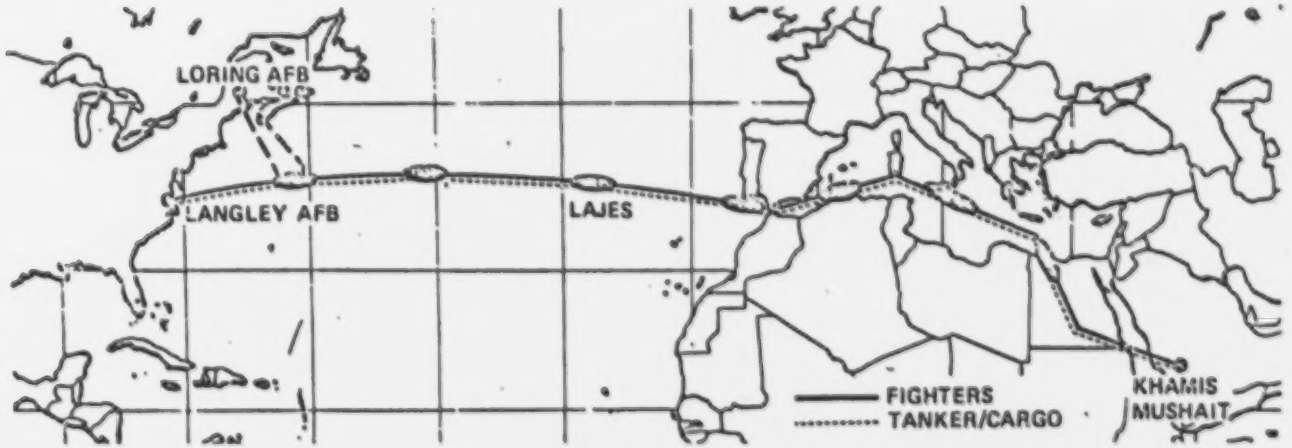
KC-10A PERMITS NONSTOP FIGHTER DEPLOYMENTS

DEPLOYMENT TO SAUDI ARABIA



1979	DEPLOYMENT	1982
• 16 KC-135A'S	• 12 F-15'S	• 6 KC-10A'S
• 3 C-141'S	• 115 TONS OF EQUIPMENT	• NO C-141'S
• 2 C-5'S	• 209 SUPPORT PERSONNEL	• NO C-5'S
• FORWARD BASES USED		• NO FORWARD BASES USED
— AZORES		• 1-DAY DEPLOYMENT
— SPAIN		• FUEL SAVED, 600,000 GALLONS
• 2-DAY DEPLOYMENT		

SHORT TERM RECOMMENDATION

- PURCHASE 40 KC-10S (PAA)
- REJECT CURRENT CRAF ENHANCEMENT PROGRAM

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AIRLIFT RECOMMENDED PROGRAM

- MIX OF LONG TERM AND SHORT TERM CAPABILITY
- PROCURE 134 C-17S
- PROCURE 40 KC-10S
- PURSUE ADDITIONAL CRAF ENHANCEMENTS
  - NEW AIRCRAFT MODIFICATIONS

BACKUP SLIDES
USED DURING
THE BRIEFING/
DISCUSSION

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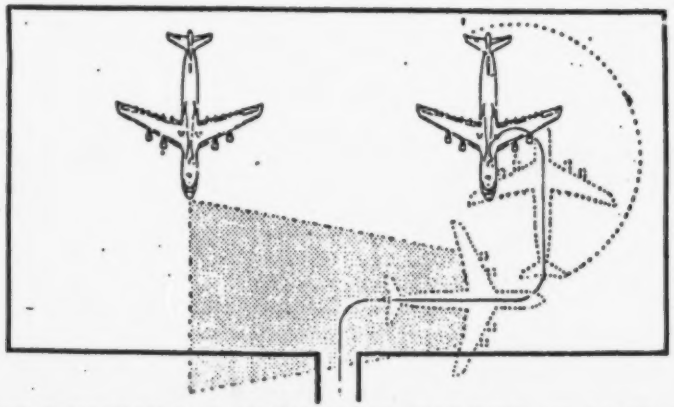
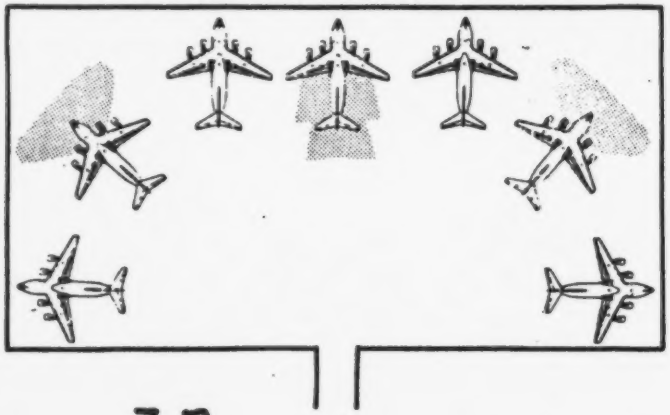
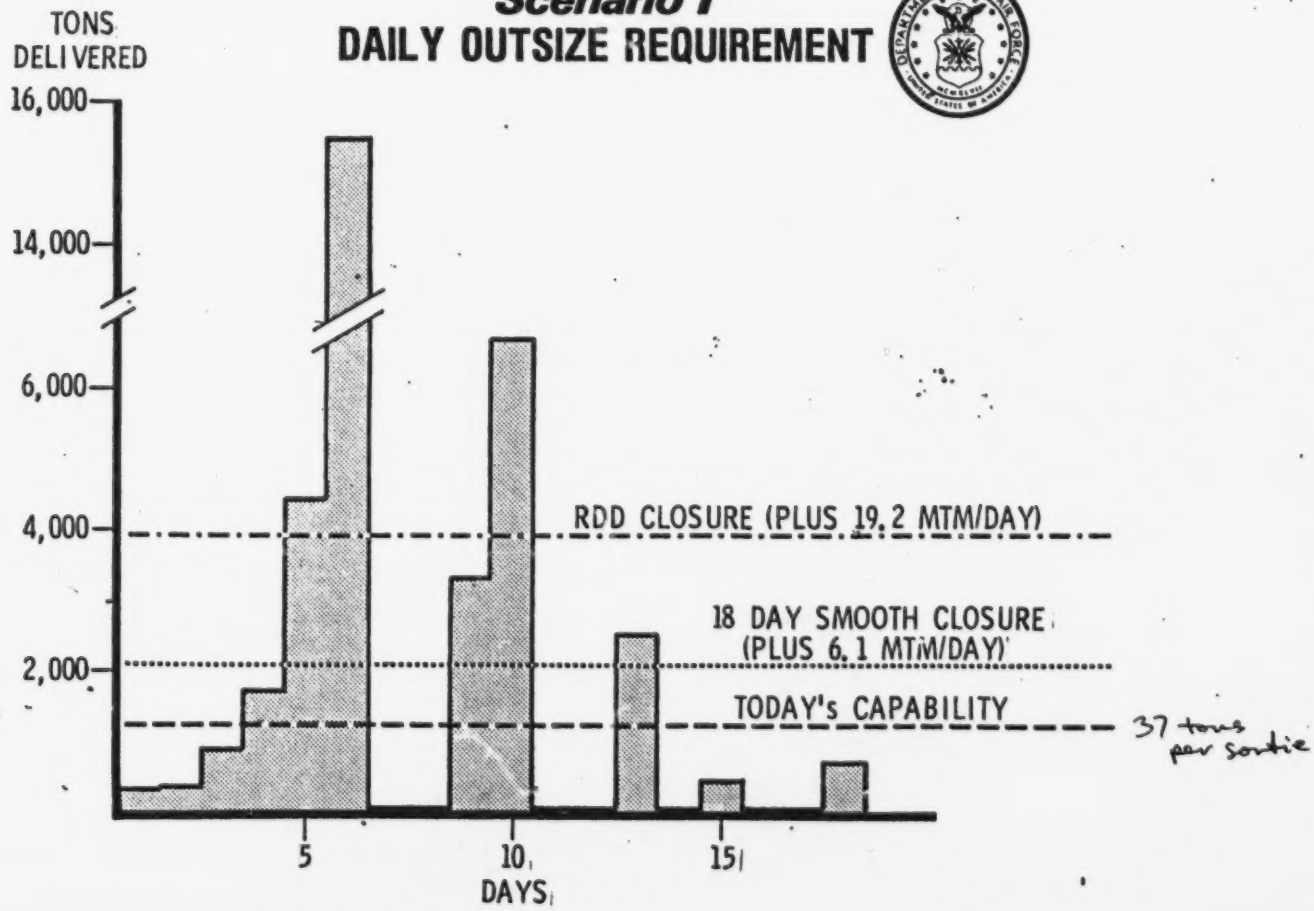


CARGO THROUGHPUT CONFIRMS BIGGER IS NOT BETTER



Scenario I
DAILY OUTSIZE REQUIREMENT



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AIRLIFT FUNDING
(TY $ IN MILLIONS)

	FY 82 & PRIOR	FY 83	FY 84	FY 85	FY 86	FY 87
PROGRAMMED FUNDS (C-17/CRAF)	202	315	886	2189	2653	4566
C-17 (88 IOC)	80	224	790.7	2219.3	2705.7	4471.9
AIRCRAFT PROCURED				2	6	17
DELTA	-122	- 91	- 95.3	+ 30.3	+ 52.7	- 94.1
40 KC-10	183	245	393	841	1051	0
AIRCRAFT PROCURED	3	4	6	12	15	
DELTA	+61	+154	+297.7	+871.3	+1103.7	- 94.1

Mr. DICKS. Basically, the briefing goes into mobility requirements, shortfalls, recommending an airlift program to you. I am advised this briefing was presented to you in January by Secretary Orr.

I have asked permission to put a copy of it in the record.

Did the Air Force provide you a briefing in January on their recommendations for airlift?

Mr. CARLUCCI. Yes.

Mr. DICKS. In discussing the C-5 offer, the briefing slides note that it provides far less airlift than needed, does nothing for aging C-130s and C-141s, and that the C-5N is a sixties design with the favorable price assuming few modifications.

What is your response to each of these points that were made in that briefing to you?

Mr. CARLUCCI. The briefing is outdated. We conducted a subsequent review with the Air Force. The Air Force is fully supportive of the program we laid out. I will let General Allen respond for the Air Force.

General ALLEN. At that time we were debating the issue of bringing an aircraft into the inventory on a longer time scale and for a broader range of requirements. In fact, many of those same views still apply as we address the question in the nineties of the aging C-130s and 141s, but the thing that changed after January was a re-emphasis of the urgency of the need for inter-theatre strategic airlift. This emphasis was made to Mr. Carlucci and Secretary Weinberger.

They agreed with it and came back to the Air Force and asked what would you do if you tried to accelerate these programs? We looked at the acceleration of both the C-5 and the C-17 and concluded it was not practical to accelerate the C-17. But we could accelerate the C-5.

Therefore, weighing those factors again, we concluded the C-5 was the preferable approach and made that decision and recommendation to the Secretary of Defense.

C-17

Mr. DICKS. The memo has a page entitled "The Users' Opinion." It quotes General Meyer, General Starry, General Gabriel, and General Kingston, as all strongly supporting, going with the C-17.

Mr. Carlucci, why did you reject their stated judgments?

Mr. CARLUCCI. Congressman Dicks, once again you have to put the program in its time perspective. We are talking about the C-17 as an aircraft for the 1990s or the late 1980s. As General Allen indicated, it was not possible to accelerate the C-17. It would serve as a very good replacement, for example, for the C-141 or the C-130. Every CINC that came in and testified before the Defense Resources Board indicated that strategic airlift was his most compelling need. I have in hand a cable here from General Kingston, whom you quoted, which fully supports the C-5 program.

What we need is additional outsized capability as early as we can possibly get it, and it is the C-5 program that can give us this capacity. Every one of the names you have read off there is fully supportive of the program that we have laid before the committee.

I would be glad to get their statements from them.

Mr. DICKS. Mr. Secretary, let's not confuse this. The point is, every single one of these people prefers the C-17 because it meets the Air Force's requirements for inter-theatre and intra-theatre outsized airlift, and, in fact, the Air Force mobility study says that the sixth priority is inter-theatre outsize and the first priority is intra-theatre outsize.

So, you have a situation where it looks to me, quite frankly, like somebody told the Air Force that you are going to get this plane because we want to take care of somebody. I think that is unfortunate for national defense policy.

Mr. CARLUCCI. Mr. Dicks, that is a completely inaccurate statement. I resent the implication.

Mr. DICKS. How could you overturn all the opinion that said go with the C-17 as a far superior airplane?

Mr. CARLUCCI. That opinion has not been overturned. You are mixing apples and oranges.

Mr. DICKS. That was the recommendation of the Air Force to go with the C.17 in January.

Mr. CARLUCCI. That was the recommendation when they did not have sufficient resources to get airlift in the near-term. I brought down the other programs in order to free up the funds for strategic airlift because this was our highest priority. This is solidly supported by the Services. There is nothing inconsistent between the C-5 program and the C-17 program, which is now in the R&D stage.

IOC AND FOC OF C-15 AND C-17

Mr. DICKS. Let me ask you this: Based on the 1982 funding level, what would be the IOC and the FOC, the full operational capability and the initial operational capability, of the C-5 and the C-17?

Mr. CARLUCCI. We would begin to get C-5s in about 1985. The C-17 would be about 18 months later if we pressed it. Is that right, Kelly?

General BURKE. It is considerably more than that, sir. There is at least a three- and more likely a four-year difference in operational capability of the C-17 over the C-5.

Mr. DICKS. IOC or FOC?

General BURKE. There is no such thing as an IOC for the C-5. That goes right to work. We already have 77 C-5s.

Mr. DICKS. I mean a new batch, the new 50 is what I am talking about.

General BURKE. I think there would be a minimum of 3 years and more likely a 4-year difference in those times.

STRETCH-OUT OF C-17 PROGRAM

Mr. DICKS. The fiscal year 1982 President's amended budget includes plans to spend $7.5 billion on the C-17 between fiscal year 1982 and fiscal year 1986, according to a submission for the record from a March 9 hearing before this committee.

What is the present funding profile for that period for the C-17?

Mr. CARLUCCI. The Air Force POM for 1984 has 29 million dollars in it for C-17. For 1985, they are projecting $36 million. This, of course, is all subject to the budget review process. We will con-

tinue a modest R&D program for the C–17, but I think it is important to note that in addition to getting the aircraft earlier, the C–5 gives you much greater airlift capability sooner because it is a larger aircraft. We would get, if memory serves me correctly, by the end of the 5-year period an increase of some 12 million ton miles from the DOD program with KC–10, CRAF and the C–5B versus some 8.7 million ton miles if the decision had been made to produce C–17s instead of C–5Bs.

Mr. DICKS. There is no question, though, that you are stretching out the C–17 program?

Mr. CARLUCCI. Yes.

Mr. DICKS. In other words, you are slowing it down?

Mr. CARLUCCI. Yes, sir.

Mr. DICKS. That is the airplane that everybody seems to think is the right plane, including the Air Force in January, and what you are doing here is putting the C–5 program in place on what I consider very shaky grounds, by the way, based on my personal review of this matter.

It does not seem to me you really have had a look at the ability to get the plant operational; that you haven't got a firm cost estimate, all of which was pointed out in the Air Force memo, that there are needs for changes on the plane, and none of that assessment was made before you made the decision to go forward unilaterally on the C–5 program.

Mr. CARLUCCI. I did not make the decision unilaterally. The Air Force gave me its recommendation, which is the program that is in the President's budget. I will let General Allen speak to that. I will let General Burke speak to the Lockheed proposal. We do have in the budget a prudent program for developing the C–17, which is a capable program for inter-theater/intra-theater airlift, but, as General Allen has testified, our most compelling need is inter-theater airlift, and it is the C–5 that can meet this need the quickest. There is no inconsistency between the C–5 program and an R&D program for the C–17.

General Allen, General Burke, why don't you elaborate?

General ALLEN. Yes, sir.

The time does move on during this period of time. As we discussed this issue, as we recognized the various concerns that were expressed by ourselves and by those who reviewed our program, the Secretary of Defense and those in Congress, about the pace of the C–17 program—that is whether we were moving too fast in that program—we continued to consider the alternatives that were in existence.

We did reconcile the concerns we had about the C–5. That is, we reviewed that proposal more carefully. We got those numbers in shape. We understand the status of the tooling. We decided we would not make modifications about which there were some questions in order to keep the costs of the configuration firmly under control. In the final analysis the decision was made on the basis of the urgent need for inter-theater capability, our complete agreement that it needed to have outsized capability and our conviction we can bring that program in on cost and schedule with very low risk.

C–5 PRODUCTION LINE

Mr. DICKS. How long has the C–5 production line been closed for building new aircraft?

Mr. ADDABBO. Final question.

General BURKE. The last C–5A was delivered in 1973. However, it is important to note much of the C–5 production line exists today and is associated with the rewinging of the aircraft.

Mr. DICKS. How much will that cost the taxpayers, General?

General BURKE. About $1.5 billion.

Mr. DICKS. We get a limited warranty for that? For one year?

General BURKE. We get a warranty that is typical and consistent with normal commercial practices in the airplane industry.

Mr. DICKS. Do we always have to rewing airplanes, General? Is that part of commercial practices, too?

General BURKE. It is not part of commercial practices.

Mr. DICKS. Thank you.

Mr. ADDABBO. The gentleman from Georgia, Mr. Ginn, is recognized for twelve minutes.

C–5 DECISION

Mr. GINN. Thank you, Mr. Chairman.

Mr. Dicks was doing such a good job for me I was going to yield him some time.

Mr. Chairman, I want to thank you for convening this hearing this morning. I think it is what we have needed for some time. That is, to get the facts on the table for the media and for the taxpayers of this country to see a comparison of the planes we are talking about.

It was interesting to me to note—and I should wait until he returns to say this—but my distinguished friend and colleague, Mr. Dicks, has gone from arguing the competitive advantage of the 747, which I think has proven to be nonexistent, to attacking the C–5 decision.

So I want to thank the Secretary for his candor in justifying the decision that has been made. I think the bottom line is which plane, which plane can give our fighting men what they need to get outsized equipment to where they might need it in the shortest period of time.

Of course, the answer, without question, is the C–5.

Mr. Secretary, in my research into the airlift issue the aspect that intrigues me the most is the significant and immediate need for more of it.

In fact, it is my impression airlift is perhaps the weakest link in our capability to carry out our contingency plan in the event of crisis or hostility, especially in the area of outsized equipment—helicopters, tanks, fighting equipment, artillery pieces, etc.

OUTSIZE AND OVERSIZE EQUIPMENT

It seems in many scenarios we cannot get enough of this equipment where we need it in a timely manner. Is the outsized shortfall our most critical airlift problem?

Mr. CARLUCCI. Yes, sir, it is.

Mr. GINN. Will the procurement of C-5Bs and KC-10s as requested in the President's budget solve our problems and meet the requirements of the CMMS?

Mr. CARLUCCI. Yes, sir, it will, at least in the sense that it will provide a more balanced capability than a 747 alternative. We have run models on all of this. We have found that in the four scenarios in the CMMS, the airlift fleet with C-5Bs and KC-10s delivers almost all the outsized cargo on time with the oversize bulk cargo.

If 747s are substituted for C-5Bs, the airlift fleet delivers anywhere from one half to ninety percent of the outsized cargo later than the associated oversize and bulk cargo. In terms of combat units, the C-5 program delivers more combat units earlier and it produces as much as one-third more brigade days in theater than the 747 program.

Mr. GINN. If our total fleet of 77 C-5As is dedicated to lifting outsized cargo, is there any shortfall in outsized airlift capability?

Mr. CARLUCCI. Yes, sir, there is.

As I indicated in my opening comments, there would be about a fifty percent shortfall in the first twenty days in the four scenarios under CMMS.

Mr. GINN. Would it be practical for C-5s to be dedicated exclusively to airlifting outsized cargo in typical scenarios such as those in the CMMS?

Mr. CARLUCCI. That is totally impractical. As General Kelley indicated, we don't move war fighting equipment like you move commercial equipment.

We move it in units. Some of the outsized equipment is bulky and not heavy, so weight comparisons are not valid comparisons. The unit has to arrive as an entity and be prepared to fight when it hits the ground.

Mr. GINN. What percentage of oversized equipment can the 747 carry compared to the C-141?

Mr. CARLUCCI. I would have to ask General Burke.

General BURKE. It is about the same. The majority of the oversized cargo can be carried on the 747. There are some oversized items that will fit on the C-141, but not the 747; and likewise there are a few items that fit on the 747, but not the C-141.

Mr. GINN. How much of this oversized equipment would have to be disassembled before it can be placed on a 747?

General BURKE. Not very much, sir.

Mr. CARLUCCI. Oversized, very little. But you would need to have loading equipment on the spot. Indeed, if you didn't have loading equipment prepositioned, you would have to bring in a C-5 to unload the 747.

Mr. GINN. Was the Boeing 747 considered by the Air Force during its deliberations over the airlift package subsequently submitted as part of the 1983 budget?

General ALLEN. Yes, sir. Over the history of the 747 two aspects have been considered. One of them was a direct competition between the 747 and the DC-10 for a tanker cargo airplane.

When the DC-10 won, that became the KC-10.

By direction of the Secretary of Defense, the 747 was also considered, although not directly competed, because it did not play

against the requirements in the most recent decision that was made. If I recall the sequence number, there did exist at the time of the decision a proposal from Boeing which we did compare, which related to the fixed price proposal on the new aircraft.

The used aircraft came in later, and we subsequently examined that.

General BURKE. We additionally considered the 747s as part of the CRAF proposals.

Mr. GINN. If the Defense Department has to take 747s rather than the C-5s, what changes would the Air Force, Army and Marine Corps have to make to Rapid Deployment procedures to accommodate the deployment of large combat equipment?

Mr. CARLUCCI. The large combat equipment would have to arrive late, of course. The 747 does not meet our requirements.

I would like to distribute charts showing how much of the equipment would arrive later than the associated oversize and bulk equipment. We have programmed that out. If we were to use the 747s instead of the C-5.

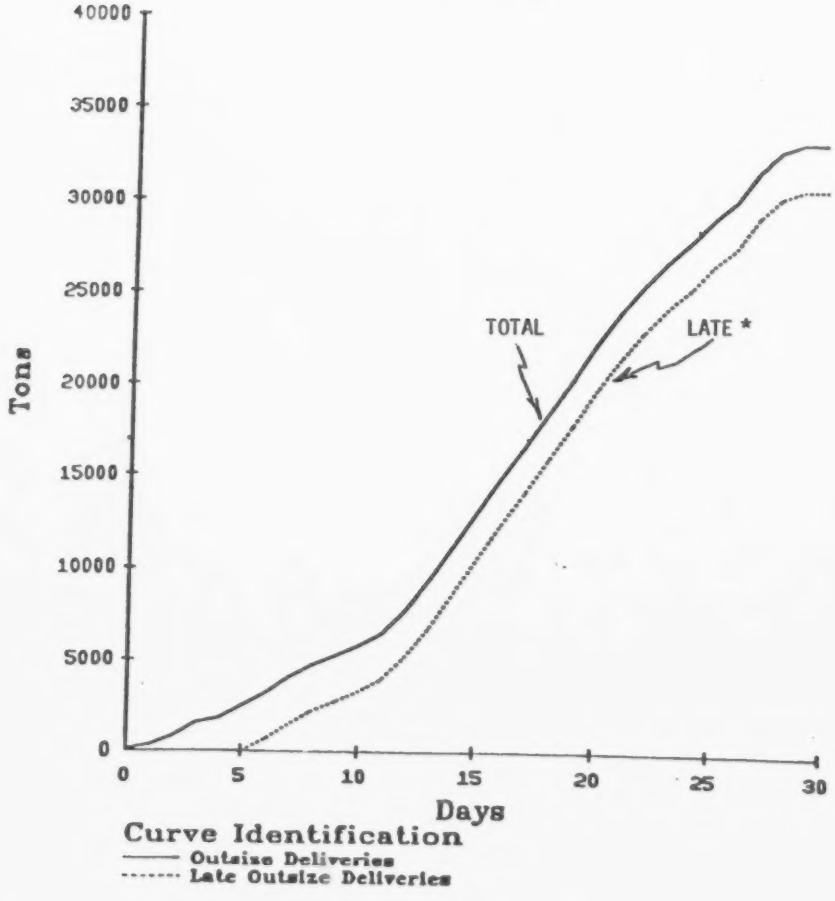
I would be glad to make those charts available to the committee. They show a very substantial late arrival.

Mr. GINN. I would ask, Mr. Chairman, those charts be made part of the record.

Mr. ADDABBO. Without objection.

[The information follows:]

Total and Late Outsize Deliveries
CMMS Scenario I
Boeing



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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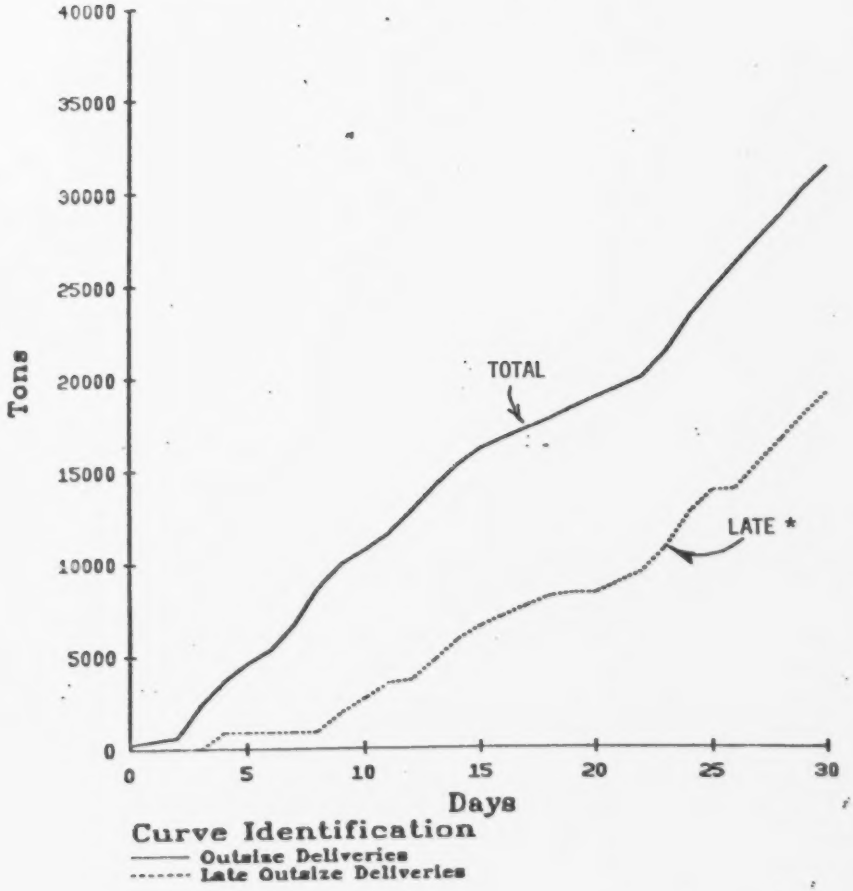
Total and Late Outsize Deliveries
CMMS Scenario II
Boeing



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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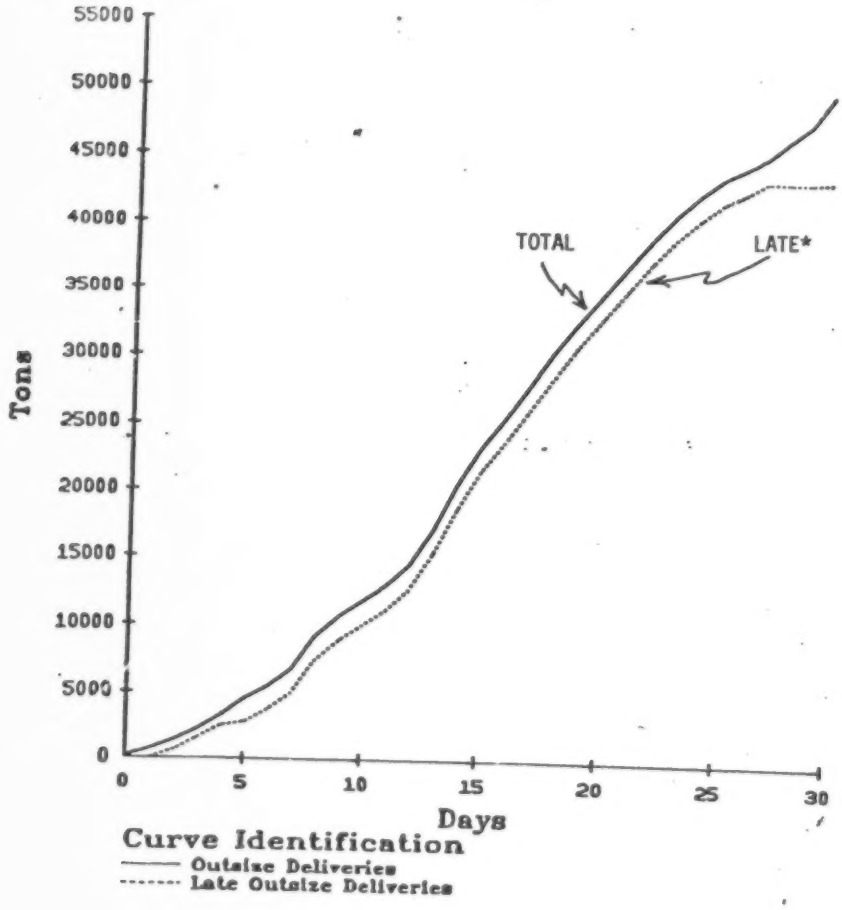
Total and Late Outsize Deliveries
CMMS Scenario III
Boeing



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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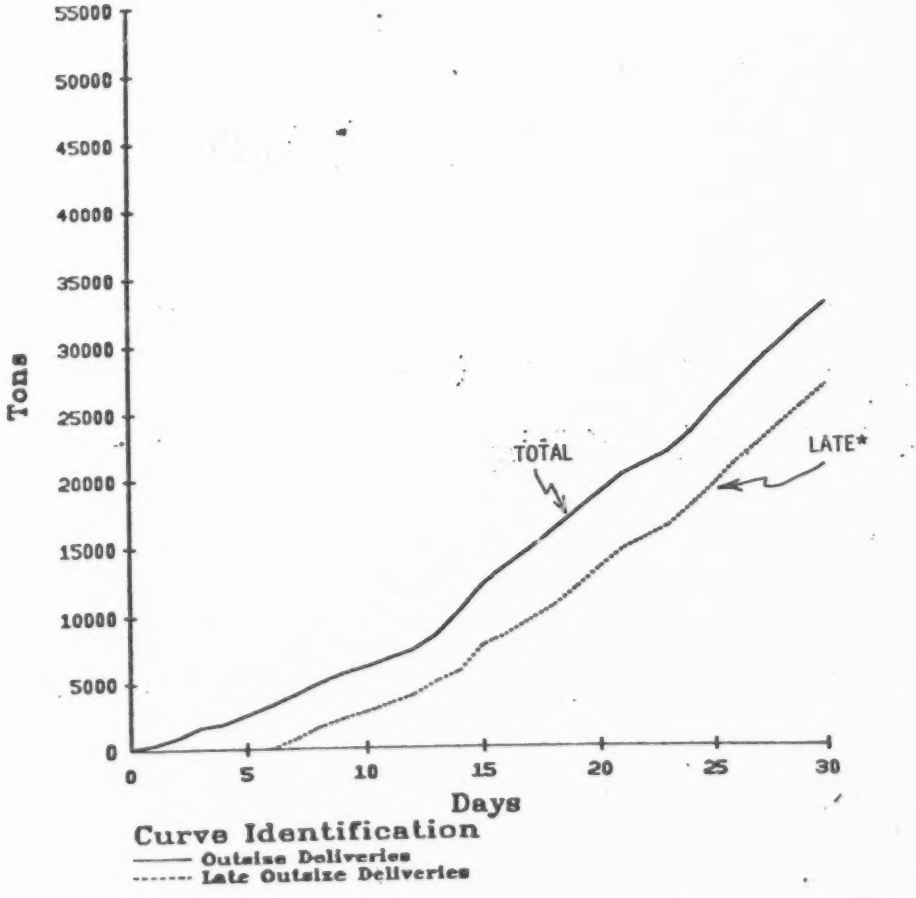
Total and Late Outsize Deliveries
CMMS Scenario IV
Boeing



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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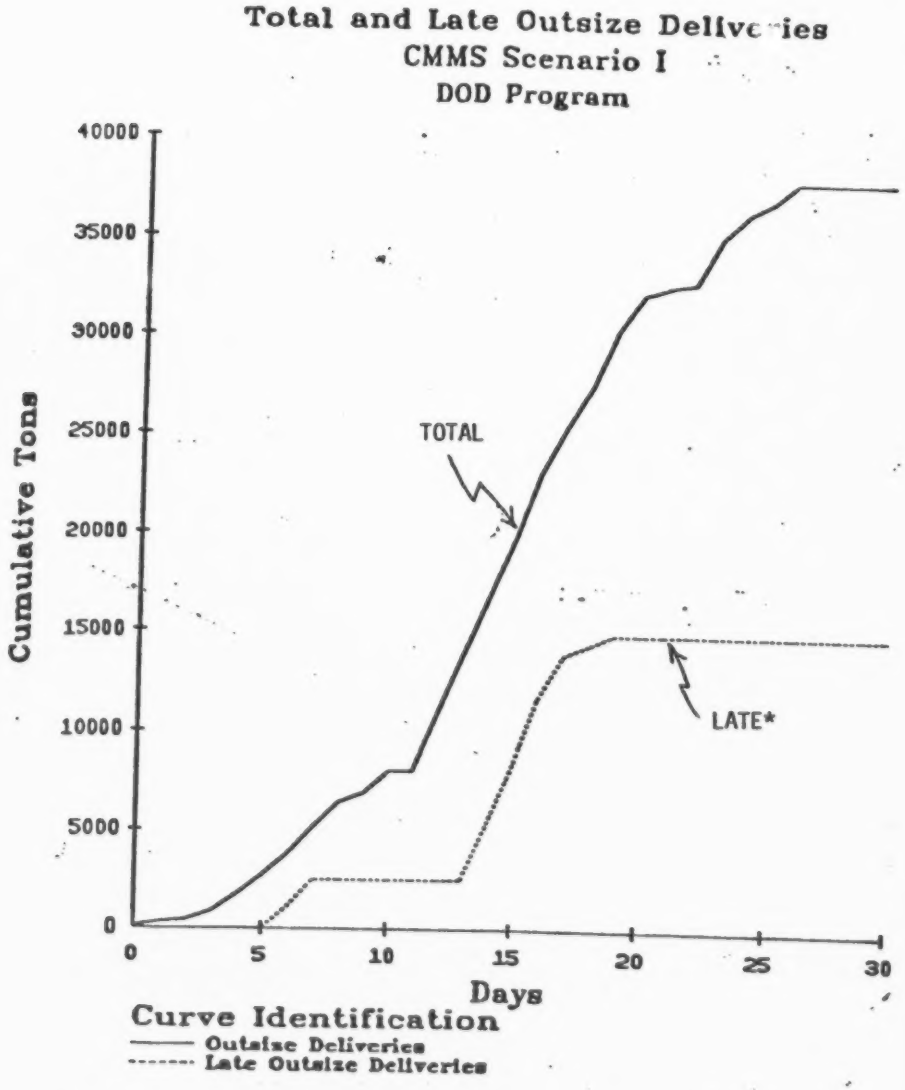

* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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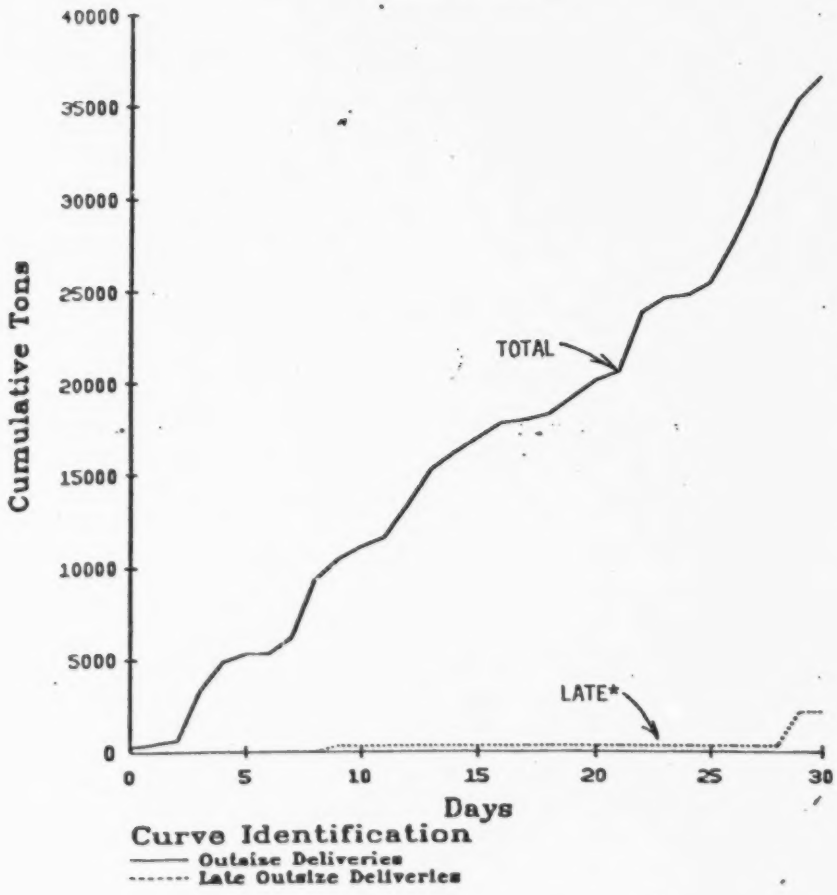
Total and Late Outsize Deliveries
CMMS Scenario II
DOD Program



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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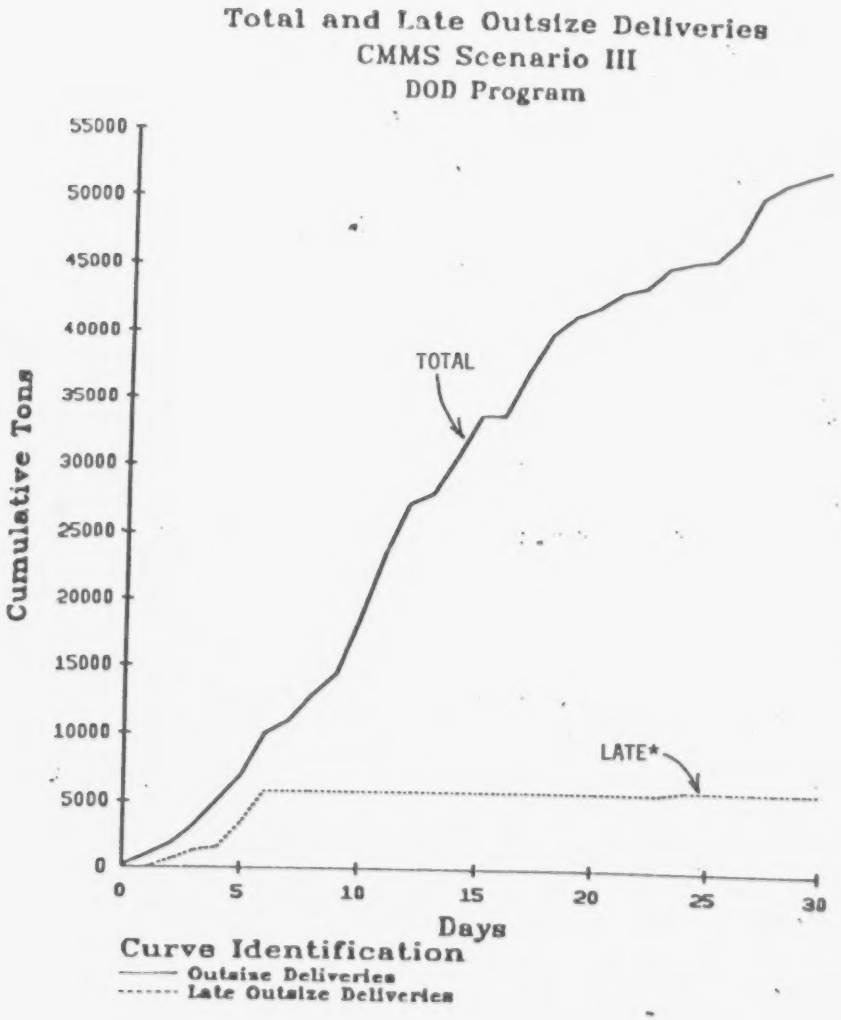

* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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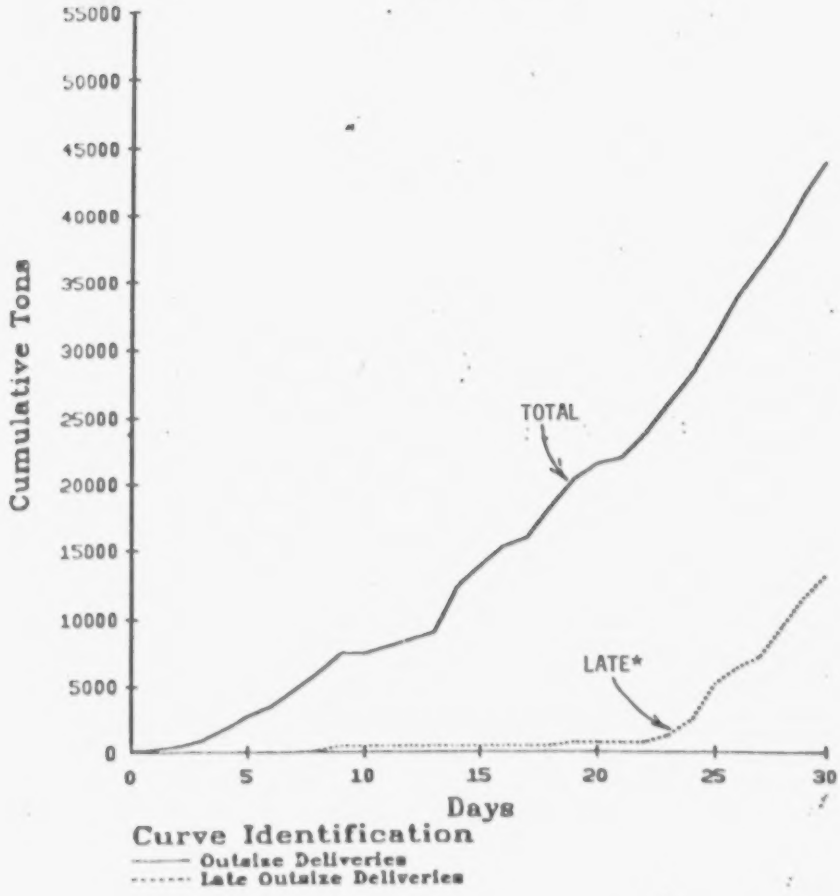
Total and Late Outsize Deliveries
CMMS Scenario IV
DOD Program



* Outsize late is outsize delivered one or more days after completion of delivery of the oversize and bulk of the same unit

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Mr. DICKS. May we see the charts, Mr. Chairman?

Mr. GINN. Mr. Secretary, if the Defense Department were directed to take 747s rather than C-5s, could sealift take up the slack by carrying the outsized equipment that would otherwise have been carried by the C-5s?

Mr. CARLUCCI. It would not get it there in time to meet General Kelley's needs or the Army's needs.

Mr. DICKS. What modifications would have to be made to the 747s to make them most useful for military airlift aircraft?

Mr. CARLUCCI. We would have to put a large side door in them. There might be other modifications to the nose.

General ALLEN. And strengthen the floor.

Mr. GINN. Would special loading equipment have to be developed for the 747s for military use?

General ALLEN. That is a difficult issue. There are several forms of that available. There would have to be examinations of where that material is available, at some commercial airports and whether we could use what is available. Then we would have to address whether to develop additional equipment and preposition it or whether to ferry it in.

It is a significant issue. We do not have all the answers.

Mr. GINN. Has the Boeing Company included specifications and cost figures for this loading equipment in its proposal?

General ALLEN. No.

General BURKE. No.

Mr. GINN. As I understand it, the 50 C-5Bs and 44 KC-10s requested in the President's budget is a package representing the Defense Department's recommendation of the best approach for moving us toward fulfilling our airlift requirements.

If the Congress breaks up this package by eliminating the C-5s and substituting 747s, wouldn't then the entire package have to be reassessed?

Mr. CARLUCCI. Yes, sir, I believe we would have to reassess the entire package.

Mr. GINN. In the airlift package submitted by DOD, do not the KC-10s have an important role in providing in-flight refueling for C-5s?

Mr. CARLUCCI. Yes, although we envisage them principally as cargo aircraft. They do have that dual capability. We would use them in that sense.

Mr. GINN. Surely then since the 747s have a greater flight range than the C-5s, would not the need for 44 KC-10s have to be reassessed?

Mr. CARLUCCI. Yes, I believe we would reassess the need for the KC-10s.

Mr. GINN. Is there danger if we go back to square one and reassess airlift packages each of which is bound to be controversial that we may end up with no airlift package for fiscal year 1983?

Mr. CARLUCCI. That would be a deplorable result, but I think it is a possibility.

Mr. GINN. Mr. Secretary, the Boeing Company claims the 20-year life cycle cost difference between the 747s and the C-5s is $6 billion.

The Air Force claims it is less than $1 billion. What are the differences in the analysis and assumptions that lead to this cost difference?

Mr. CARLUCCI. General Burke can go into that in some detail, but in gross 1982 dollars, the 20-year life cycle cost of the 50 C-5s as proposed by the Administration would be $16 billion.

We estimate the Boeing proposal for comparable capability to be $14.1 billion for used aircraft or $15.0 billion for new aircraft.

Mr. GINN. Are the outlays for fiscal year 1983 through 1985 considerably higher for the 747 buy than for the C-5 buy?

Mr. CARLUCCI. Yes. The outlays in the early years would be considerably higher.

Mr. GINN. This I think is an important question, Mr. Chairman. Do we already have access to all existing American freighter 747s through the Civilian Reserve Air Fleet Program?

Mr. CARLUCCI. A number of the planes proposed for the sale are already included in the CRAF passenger program.

As I indicated in my opening comments, buying and modifying them would be the most expensive way of acquiring their military cargo capability. We would be fully prepared to work with the airlines through the CRAF enhancement program providing compensation for the necessary modifications and for the resultant increased operating costs. This would make far more sense from a military standpoint.

Mr. GINN. Mr. Chairman, I think my time has expired. I want to thank you for giving me this opportunity to ask questions.

I want to thank you, Mr. Secretary, and your witnesses, particularly you, General Kelley, for your candor when we are talking about saving the loss of lives.

I think your statement was right on the money. I think when the facts are out on this matter, Mr. Chairman, this Congress will fully justify and support the decision made by the Department of Defense on this important matter.

REVISIONS TO DEFENSE BUDGET

Mr. ADDABBO. Mr. Secretary, there has been discussion of revisions to the Defense budget.

If we scale back DOD's five year defense plan because of the nation's overall economic problems would you be willing to partially fund DOD's airlift needs by scaling back the cost of the strategic nuclear package of MX, Stealth, ALCMS, or Tridents?

Mr. CARLUCCI. No. There are some modifications in the Trident program that have to do with retrofitting the Trident II missile and result in, if memory serves me correctly, about $450 million in savings.

We have proposed no other modifications in the strategic package.

AIRLIFT VIS-A-VIS SEALIFT VIS-A-VIS PREPOSITIONING

Mr. ADDABBO. When we discussed the airlift question, we also have to look at sealift and also prepositioning.

Have you looked at the cost effectiveness of airlift vis-a-vis sealift? As we look at past history of wars, airlift played a very small

role compared to sealift in terms of providing large quantities of supplies.

Weapons systems and enemy capabilities have changed. Could you put in perspective for the committee the need to tremendously expand our strategic airlift capacity at this time rather than sealift?

Mr. CARLUCCI. We view the three modes as mutually reinforcing. Typically today we can preposition about ninety percent by weight of a unit's equipment.

The remaining items are either too difficult or too expensive to preposition, such as helicopters. Without this equipment, however, the units may well not be able to operate. So we would get as much as we could there by rapid sealift, but rapid sealift still doesn't get it there fast enough.

The total time to deploy to Southwest Asia using SL-7s is sixteen to twenty eight days depending on the route used. In order to get General Kelley's helicopters on the scene rapidly, we would have to use strategic airlift.

Mr. ADDABBO. If we look at the comparisons, the committee has appropraited funds in the past for the SL-7 cargo ship and they can carry 10,000 tons or more. The C-5B can carry about 75 tons. The 747 about the same.

The cost of procurement and modification of one SL-7 is approximately $155 million or less than one C-5 in then-year dollars, and less than two new wide body cargo planes.

When we look at the operating costs, we find the fleet of sealift is naturally much less than airlift. Don't you agree that more careful consideration should be given to placing more emphasis on sealift and the so-called floating POMCUS assets as compared to airlift?

Mr. CARLUCCI. Mr. Chairman, we are enthusiastic advocates of rapid sealift and of prepositioning. Unfortunately, they do not meet the full requirement, and we need strategic airlift to fill that gap. Indeed, that was the purpose of the Congressionally Mandated Mobility study—to look at the mobility requirements and to determine what our shortfall in strategic airlift is.

We came up after extensive work on this study with the four scenarios and the overall recommendation of some 25 million ton miles per day. Even our program would still leave us approximately 30 percent short of meeting that requirement.

Our program would get us up to about 17 million ton miles per day. That takes into account the sealift and prepositioning.

SURVIVABILITY OF AIRLIFT AND SEALIFT

Mr. ADDABBO. In looking at mobility in sealift and airlift, what is the comaprison of survivability as far as airlift and sealift are concerned?

Mr. CARLUCCI. Any system would be vulnerable, Mr. Chairman. Rapid sealift would have to be escorted, and I assume airlift would have to be protected if you were in a combat situation.

Let me turn to our military colleagues here.

General ALLEN. Yes, sir. There are vulnerabilities in all of them. Maritime prepositioning is a concern. The unloading in the dock

areas is a concern. The aerial ports of delivery are certainly a concern.

In all those cases we have to ensure that the appropriate defenses are provided and available in the early deployment and are part of the deployment plan.

General KELLEY. I think it is totally scenario-dependent. If you are going to move a force, be it by airlift or by sealift, you are going to provide those assets necessary to ensure enroute protection.

I don't think you can compare the vulnerability of airlift and sealift without a specific scenario.

Mr. ADDABBO. The reason I raise these questions is because the Air Force has testified that the survivability of sealift is a serious deficiency in using that mode of supplying equipment to troops. I gather from your answers here they both have their shortfalls, but both are capable of doing the job.

Mr. CARLUCCI. Yes, sir, that is correct.

Mr. ADDABBO. The gentleman from Alabama, Mr. Edwards?

CX AND C-5

Mr. EDWARDS. Thank you, Mr. Chairman.

There was a time a few years ago, sitting right here in this room, where the Air Force was desperately trying to make the case for the CX and it was the Congress who was saying well, what is wrong with the C-5?

All you guys were saying well, what we really need more than anything in the world is the CX. You went all the way to the point of naming the C-17. Now you are telling us you really don't need that C-17 until the early nineties.

At that time I suppose the way things go the C-17 will look like something else by then.

I stay a little confused about all of this. I think everybody agrees that the C-5 will do what you are sitting over there saying you need done. I guess the big question is, whether that ultimately is the right thing to do. Are you going to end up the two lines open? Are you going to open up the C-5 line and then come back here shortly and open up the C-17 line, assuming you can get the money to do it?

Is the C-17 put on the back burner with a little money to go over each year for the next eight, ten, five years?

Are you going to come back a year or two from now and say what we really need is not 50 C-5s, but 112 C-5s, which is what you have talked about earlier, or are you going to come back somewhere through the process and say, well, we have enough of those things; we need to go on to the C-17?

I don't know where we are all coming from. It just seems to me like there has been an awful lot of confusion on your side of the table over the last two or three years and it is easy to confuse us. So if you get confused, then we really are in trouble.

Straighten me out a little. Where are we going over the next ten years with airlift?

Mr. CARLUCCI. I think if we seem to have changed our position, I guess it is fair to say that the Senate has at least changed its position.

Mr. EDWARDS. I forgot to put that in the equation. That should be in there as well.

Mr. CARLUCCI. We have, Congressman Edwards, given this whole area very serious study because we think that this is an integral part of a five-year program that we are laying before the Congress.

Indeed, we think that is one of the unique aspects of the 1983 defense budget—the full funding aspect. We attempted to lay before the Congress a road map of where we are heading through the mid-1980s. Strategic airlift is an integral part of that.

Let me emphasize again there is absolutely nothing incompatible with the C-5 program and an R&D effort on the C-17. The C-5 gives us a vital inter-theater capability that we need right now.

The C-17 will give us enhanced intra-theater capability.

The C-5 also gives us some intra-theater capability. Right now we also have the C-130s, but towards the end of the 1980s we are going to have to look at replacements for some of the C-130s.

We are going to have to look at replacements for the C-141s, so we do need to continue the R&D effort on some kind of carrier that would give us good intra-theater capability, including outsized capability.

Once again, there is nothing inconsistent between this program and the 50 C-5s. Indeed, we would have the C-5s well under production before you would be able to get a C-17 program into production. So I don't envisage any need to come back to the Congress and say whoops, we have changed our mind.

We haven't changed it. Indeed, we have been consistent in the sense that no final decision on the Administration's program had been made when this Administration came into office. This was one of the first problems that was brought to my desk: What are you going to do on the C-X issue and strategic airlift? We worked to come up with a program that we think is a sensible program.

As General Kelley indicated, this is a program that is supported unanimously by the uniformed services.

Mr. EDWARDS. I never can remember who built all these things. What was the nature of the award that was made on the C-17 to McDonnell-Douglas?

Mr. CARLUCCI. This was a preliminary determination of what bid might be the best should we go ahead at this point with the C-17, but it was always envisaged right from the outset. Indeed, I believe there was something written into the congressional language—namely, that that aircraft would be competed against existing model aircraft to see which best met our needs.

General ALLEN. That is right.

Mr. EDWARDS. Comment on this as you answer: Was that an unusual way to make an award?

General ALLEN. No. I didn't think it was particularly unusual.

Mr. EDWARDS. Do we go around making awards to companies like that all the time with aircraft?

General ALLEN. No, but we are often put into the situation where the final decision we have to make is whether to go ahead with the program or not and to compare that with alternatives

which were, in fact, in direct head to head competition. That happens, for example, on almost every modernization program we have where at one point we get to the point where we are deciding to go into production and the alternative is to continue production of an earlier model. So I don't think it was all that unusual.

Mr. EDWARDS. As one might imagine, we hear a lot from contractors on these kinds of minor issues that come up once in a while. I have heard from one of the participants—one who would like to be a participant, I think, in the more immediate future that there is, in fact, an 18-month difference between the IOC on the C-5B and the C-17, and the Secretary said that is what he thought it was and then General Burke said no, it was more like three or four years, which has always been the Air Force's view, as I recall.

About that time I had to go up and do my duty and vote. I wonder if somebody can clear me up on what, in fact, is the difference in the IOC and why the company and the Secretary think it is 18 months and the General thinks it is three or four years.

Mr. CARLUCCI. My memory bank, Congressman Edwards, was going back a way. I was citing a figure that we were discussing in January, and I assume that subsequent to that the Air Force has refined its data and come to a different conclusion.

General ALLEN. General Burke can answer, but let me make a little comment before he starts. The contractor, in deriving the 18 month number, assumes the government can operate with great efficiency. There are, in fact, constraints on the government's speed of operation.

Mr. EDWARDS. We know about that.

General ALLEN. They are needed. They involve processes and steps we have to go through and which I think are proper to go through. These do influence these time scales.

General BURKE. The 18 month number is a hypothetical number that will allow McDonnell-Douglas to put together what they consider the fastest practicable schedule. We have looked over that schedule and we believe it assumes, as General Allen said, the government can operate more quickly and efficiently than history would tell us it can.

Second, that schedule requires a great deal more concurrency than we would recommend to you or if experience is any judge, that you would be prepared to accept.

Mr. EDWARDS. You are always recommending concurrency. Would this be worse than what you are always recommending?

General BURKE. Any virtue carried to an extreme is a vice. Some concurrency is good; too much is bad.

Mr. EDWARDS. Mr. Secretary, I heard it said that the Pentagon, which I guess means you and Secretary Weinberger in this case, simply would not buy the 747 if that in fact is what ultimately came out of the Congress.

Are you in a position to respond to that?

Mr. CARLUCCI. Budget decisions are presidential decisions, Congressman Edwards, but we have here clearly an aircraft that does not meet our requirements. I for one would consider it wasteful if we were to go ahead and be obliged to purchase it. So certainly we would have to give consideration at least to recommending to the President the possibility of a recision.

Mr. EDWARDS. You feel that strongly about it?
Mr. CARLUCCI. Yes, sir.

LIFE CYCLE COSTS

Mr. EDWARDS. You talk about life cycle costs. I wonder if you or the General would put in the record the breakdown of life cycle costs as you perceive them?
Mr. CARLUCCI. Yes.
[The information follows:]

The Air Force estimates that 48 new 747's would cost $3.8 billion, in fiscal year 1982 dollars. This figure assumes Air Force organic logistics support and includes initial spares and full support costs. The estimated 20-year operating costs associated with these 48 aircraft are $9.4 billion, also in fiscal year 1982 dollars. The total life cycle cost estimate is therefore $13.2 billion for 48 aircraft. However, for the scenario Boeing considered, Air Force analysts concluded that 55 747's would be needed, rather than 48. For 55 747's, the life cycle cost estimate is $15.1 billion. For 50 C-5B's, the Department estimates costs of $6.4 billion for acquisition and $9.6 billion for 20-year operations leading to a life cycle cost of $16.0 billion.

Mr. EDWARDS. General Burke, would you comment on who would maintain the aircraft in the various scenarios that you used to put those life cycle costs together?
General BURKE. I think it would be better supplied for the record. To the assumption on who would maintain the aircraft, the Boeing proposal assumes that maintenance would be by contractor support. It also assumes what appears to us to be a very favorable price estimate for that maintenance support. It assumes that contractor maintenance would be a great deal cheaper than in service maintenance. That is questionable in our minds. It is also questionable as to the desirability of having a major element of our force maintained by contract.
Mr. EDWARDS. Finally, Mr. Chairman, in times gone by when you have had aircraft to consider, you had great debates internally in the Pentagon and you fought and we could always find some General or some Admiral who was never happy and who would come over here and speak in our ear and tell us all the faults of the other side.
Maybe that is talking out of school, but everybody knows that happens. Nobody is coming over here saying, man, what we really have to do is have that 747. Is there anybody over there who really is carrying on a serious internal debate on behalf of the 747, or is this one of those rare occasions where the Pentagon really is solidly behind one aircraft?
Mr. CARLUCCI. I know of no one advocating the 747. Let me ask my colleagues to speak for themselves.
General ALLEN. If these decisions weren't tough, I don't suppose you would pay us the very high salaries you do to try to make them, but——
Mr. EDWARDS. Let the record note he grinned.
General ALLEN. The fact is this has required a great deal of argument and debate within the Air Force. I wouldn't be surprised but what there are people who have argued one way and the other at various times.

When the decision was made, we went to some lengths to explain to our people why we made the decision because it certainly wasn't obvious to everyone due to the press of events that took place.

We explained it fairly carefully and explained what the logic was. I think, in fact, the Air Force has all lined up together. Although I wouldn't be surprised that there would be people who would have differing views of it, I think the leadership of the Air Force and the majority of people involved in the program are very solidly behind this recommendation.

Mr. EDWARDS. You really have circled the wagons around the camp on this one.

General ALLEN. I realize that is one way to say it.

I would like to believe that that is not the case. That, instead, what we did was to go to some care to explain to people why we made the decisions that we did because they were a change from the course we had before.

Mr. EDWARDS. Thank you.

General ALLEN. I think that logic is solid.

General KELLEY. From a user's perspective, Congressman Edwards, I have not heard any officer from the Army or Marine Corps who has seriously considered the 747 as a reasonable substitute for the C-5.

Mr. EDWARDS. Thank you, Mr. Chairman.

Mr. ADDABBO. When the B-1 was cancelled, everyone said good, we don't need the B-1. We need something else.

When the B-1 was revived, everyone said, that is what we need, the B-1.

So if the case is reversed again and a new decision is made, I expect a good show.

Mr. CARLUCCI. I imagine, Mr. Chairman, when the B-1 was cancelled you heard some voices out of the Air Force.

Mr. ADDABBO. The Air Force came up here and supported the cancellation. They are good soldiers. We appreciate them. We commend them for it. They are good soldiers and follow their commander-in-chief.

UNOBLIGATED BALANCES FOR CX

Along the lines of the C-17 or the CX, as of March of 1981, there was $31.8 million in unobligated balances for the C-17 or CX. In April of 1981, the Secretary said they would start a modestly paced research and development program based on a C-17 design. That was on April 15th.

Have the funds been obligated for R&D on the C-17 or CX?

General BURKE. They have not yet been released. We first wanted to have a clear understanding from you and the other concerned committees this was an agreeable thing to do and then we would proceed.

Mr. ADDABBO. The money is still unobligated?

General BURKE. But we are prepared to move out rather quickly on it.

Mr. ADDABBO. Are any additional funds being requested in the 1983 budget?

General BURKE. No, sir.

Mr. ADDABBO. Are any funds being requested in the 1984 POM?

Mr. CARLUCCI. Yes, they are requested in the 1984 POM. That is provisional, of course.

Mr. EDWARDS. Would you yield just one second?

Mr. ADDABBO. Yes.

Mr. EDWARDS. Did you say there is no 1983 money for the C-17 in any line?

General BURKE. That is correct, sir. The proposal is to take the $31.8 million, which is 1981 money, and spend it evenly in 1982 and 1983 and pick up with the 1984 POM if the current position is sustained.

Mr. EDWARDS. Thank you.

LOADING AND UNLOADING THE C-5 VERSUS THE 747

Mr. CHAPPELL. General Burke, let me see if I understand this loading and unloading situation.

If you had at Andrews, or any place where we could see the C-5 alongside the 747, and all of the loading and unloading equipment necessary for both, what would that situation look like?

General BURKE. You would see very graphically that military transport aircraft are designed quite differently than civilian transport aircraft. They have a different philosophy. Civilian transports are designed to operate from major terminal to major terminal where there will be large and fairly cumbersome equipment and people to look after them.

We expect to operate in the military aircraft austere airfields where we may not have that support. The first thing you will notice is all the military airlift aircraft will have a high wing and the commercial one a low wing and that the floor of the military airplane will be quite low. The C-5 is five feet off the ground.

A ramp folds down from that so you can drive vehicles on and off either end.

If you look at the 747 in contrast, you would see its loading floor 16 feet above the ground. So things are going to have to be hoisted up to that 16 foot level and then inserted.

I think probably the next big difference that would catch your eye is that the entryway to the C-5 is much larger than that of the 747. It is 13 feet high as compared to about eight feet high for the 747 and obviously that allows a great deal more for large equipment to pass through the larger entrance way.

Those are the major differences.

Additionally, you would see there is a lot of equipment even to service the commercial airplane. Large stands to get to the top of the 747, to refuel it. Another stand for the crew to get in. Their entrance door is at a fairly high level. Once again on the C-5 all of that is accessible at ground level.

Mr. CHAPPELL. Well, let me pursue this.

Would you have a lot of unloading and offloading equipment in and about the C-5?

General BURKE. No. The C-5 is self-sufficient in that wheeled vehicles, tracked vehicles can drive themselves on and off. Other equipment can slide right off the ramp. That five foot is a standard truckbed height.

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Mr. CHAPPELL. Are you saying the C-5 doesn't need a whole lot of equipment around it to load and unload?

What would you see around the 747?

General BURKE. You would see a very large array of big, cumbersome equipment

Mr. CHAPPELL. A statement was made earlier that you would have to haul the equipment, the unloading and loading equipment, in the C-5 to offload the 747, is that correct?

General BURKE. If you were going to operate the 747 into a base, say you were going to fly it to Frankfurt, Germany, you would find that equipment there because it is in commercial service.

If you went anywhere else in Germany, you would have to take it with you.

Mr. CHAPPELL. Assume you are going to fly to a terminal already set for you in a secluded area. Do you have to carry that equipment? Someone made the point you have to carry it for the C-5. Can't you carry it in the 747?

Mr. DICKS. I don't think that is accurate. I think you can take it in the lower bay of the 747; take it off and use it for unloading purposes. I think that has been established in prior testimony.

General BURKE. I think equipment that would offload a two and one-half ton truck would not be transportable on a 747 without a great deal of disassembly.

Anything can ultimately be disassembled. I don't think in operable form it could do that, Mr. Dicks.

Just looking at the pictures, I don't see how it could.

Mr. CHAPPELL. I have several pictures here. Could you identify them and tell me if they represent a true representation of the two aircraft and tell us which is which?

General BURKE. That is the C-5.

Mr. ADDABBO. The gentleman from North Carolina would like to see them too. We have extra copies, I think.

General BURKE. The C-5—this is fairly typical equipment.

Mr. EDWARDS. We can't hear you.

General BURKE. Going in the side door. This is going in the front door. The last picture is of a helicopter coming off a C-5 in essentially a combat-ready position.

Mr. CHAPPELL. Mr. Chairman, could these be made part of the record?

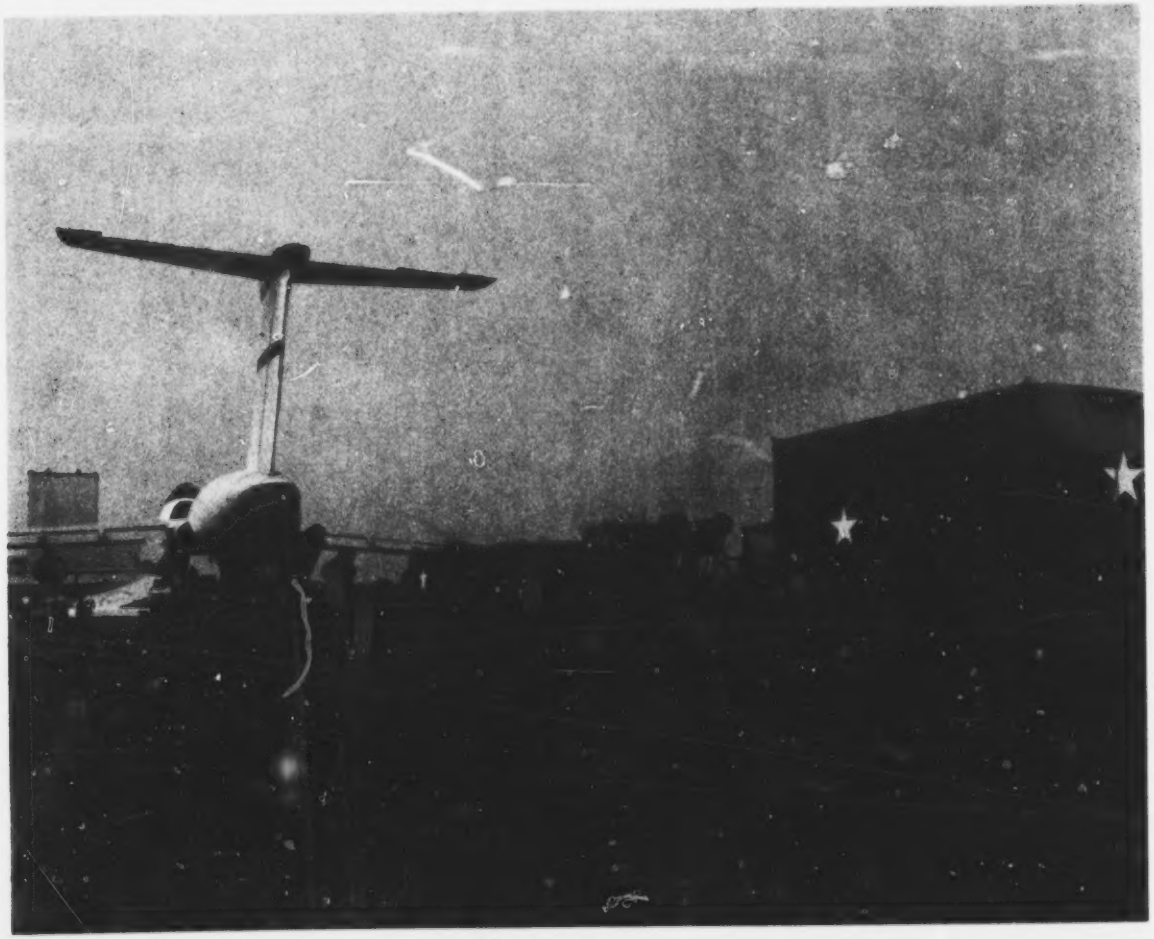
Mr. ADDABBO. If they can be put in the record, we would be happy to do so.

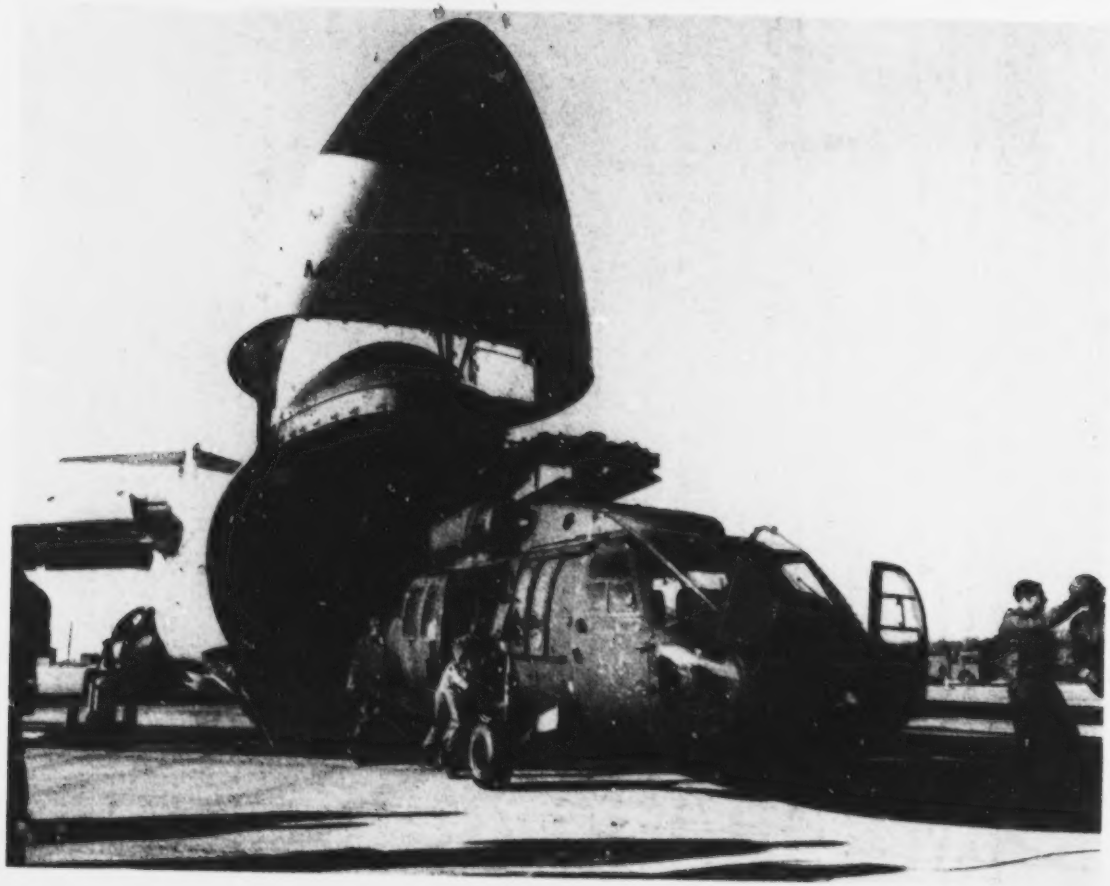
[The information follows:]

MILITARY AIRLIFT COMMAND

BEST DOCUMENT AVAILABLE

BEST DOCUMENT AVAILABLE





BEST DOCUMENT AVAILABLE

Mr. ADDABBO. I have one question. I understand that the DOD is looking at the presentation made by Boeing. They put out a beautiful brochure in support of the 747s. Under the law that cannot be paid out of federal funds. I know DOD has looked at that.

I am hoping these pictures were not paid out of federal funds. Did you have these pictures produced?

Mr. GINN. Of course.

General BURKE. Those look like pictures I have seen around for years.

Mr. EDWARDS. For years?

Mr. CHAPPELL. I am really trying to get some idea on the bulk, how much space would be required to carry this unloading equipment. Is this an area where you didn't have unloading equipment?

General BURKE. I think——

Mr. CHAPPELL. Are we talking about one C–5 load, half a load?

General BURKE. I suspect they would be the best part of a C–5 load to take all that would normally be associated with the 747 operation.

You might find ways to improvise and not do all of that.

Mr. CHAPPELL. Could that be used to unload other 747s as they came in? Is it a one-shot deal, assuming you had that capacity?

General BURKE. Yes.

COST OF 747'S

Mr. CHAPPELL. Let me ask you a question about costs.

Under the Boeing proposal, how many 747s are involved?

General BURKE. The Boeing proposal is 48.

Mr. CHAPPELL. What is the cost?

General BURKE. The cost of those in acquisition, we believe, is $3.8 billion in 1982 dollars, and the 20-year life cycle cost is $13.2 billion, also in 1982 dollars.

Mr. CHAPPELL. Are those new aircraft?

General BURKE. Yes.

Mr. CHAPPELL. Is the proposal for new aircraft?

General BURKE. That is the proposal. Boeing argued that that is, of course, of equal capability to 50 C–5s. We would disagree completely with that.

Mr. CHAPPELL. But on the cost—does the $3.8 billion for the purchase of those aircraft include the loading and unloading equipment?

General BURKE. No, sir.

Mr. CHAPPELL. Do you know what that would be?

General BURKE. No, sir.

Mr. CHAPPELL. Have they given you any figures on that?

General BURKE. No, sir.

Mr. CHAPPELL. Suppose the same 50 aircraft were available to you under the CRAF program. What would the CRAF program cost?

General BURKE. It would be a small fraction—one-fifth or one-seventh of the life cycle costs.

Mr. CHAPPELL. $5.9 billion?

General BURKE. I have a life cycle of $13.2, so it would be on the order of perhaps $2 plus billion.

CRAF ENHANCEMENT PLANS

Mr. CHAPPELL. Can those CRAF aircraft be reached by presidential edict?

General BURKE. Yes, sir.

Mr. CHAPPELL. So if the President can reach those in time of emergency anyway, does it make sense for us to bring them into the inventory at that cost and deplete the use of monies that could be used for increasing your outsized capacity?

General BURKE. In my opinion, commercial air freighters and passenger carriers ought to be operated by the United States airlines and not by the United States Air Force.

Mr. CARLUCCI. May I elaborate on that? We have done some figures. If we were to start up an accelerated CRAF program in 1983 for about $200 million, this would buy a single start-up at $50 million, three conversions, front-end payments of operating penalties to the airline and long lead funding for about ten additional modifications in 1984 and 1985.

We estimate that under this program participating airlines would receive about $23 million per 747 in fiscal year 1983 for the front-loaded operating penalty, and the remainder would go for modifications and labor.

That, of course, goes to the contractor.

Mr. CHAPPELL. If you go with the Boeing proposal, do you get any C-5s under that program?

Mr. CARLUCCI. No, sir.

Mr. CHAPPELL. I have a quote here I would like to read. From the previous commander of the Military Airlift Command, General Estes. He said,

> Almost everything we learned from the C-135 was negative. I learned we should never bring into the Air Force inventory an aircraft designed for commercial passenger use and expect it to perform as a military cargo carrier.

Do you feel his opinion has relevance to the proposals for the 747s and C-5s?

General ALLEN. Yes, sir.

Mr. DICKS. Why are you buying KC-10s then?

General ALLEN. The reason that we bought the KC-10 is because it adds to that the refueling capability. It offers us an aircraft on which we can accept some of the disadvantages of a commercial freighter because of the refueling capability.

Mr. ADDABBO. The gentleman from North Carolina, Mr. Hefner?

Mr. HEFNER. Mr. Chairman, I have some questions for the record.

[CLERK'S NOTE: Questions submitted by Mr. Hefner and the answers thereto follow:]

Question. The CRAF program has provided us with a very cost-effective addition to our mobility capabilities. It is my hope that we will continue to have a viable CRAF program. Could you tell me what the current Air Force plans are for the CRAF Enhancement Program?

Answer. The current DOD plan funds a restructured CRAF Enhancement program beginning in fiscal year 1984 at a cost of about $185 million. We are also considering the potential for accelerating this important and cost-effective program if funding availability

and positive responses from the airlines indicate such a move would be prudent.

DOD AIRLIFT PROGRAM

Question. Advocates of the 747 attempt to portray Secretary Orr's airlift enhancement decision as an outsize-only decision, while characterizing the enhancement need as for both outsize and oversize capability.

Since the DOD-proposed program is for both 44 KC-10 and 50 C-5B aircraft and since the C-5B can carry oversize as well as outsize, it appears to me that the Air Force is proposing a balanced program. Is this a correct perception?

Answer. The DOD program provides 17 million ton miles per day of added airlift capability balanced between outsize and oversize/bulk capability. The C-5B provides 8 million ton-miles per day of additional outsize/oversize/bulk capability, while the KC-10 and CRAF enhancement programs provide, respectively, 5 and 4 million ton-miles per day of additional oversize/bulk capability. This program is balanced along the lines recommended by the Congressionally Mandated Mobility Study.

Question. Does the Air Force have any plans to pursue airlift options that will specifically address the shortage of oversize/bulk cargo capability?

Answer. Yes; two current programs address oversize/bulk cargo shortages. The C-5B has inherent oversize/bulk capability and will help reduce the shortfall in this area. In addition, the KC-10 portion of the current airlift/mobility program specifically addresses oversize/bulk shortfalls.

The Air Force continues to pursue CRAF enhancement programs as the most cost-effective solution to oversize/bulk cargo movement. Current economic realities have forced reevaluation of CRAF Enhancement Programs—all parties agree that the program is required, but execution of the program requires restructuring.

[Clerk's note: End of questions submitted by Mr. Hefner.]

C-5 VERSUS 747

Mr. HEFNER. If the Congress made the determination to go with the 747 and you and Secretary Weinberger and the President decided they were just not going to go this route, what would that do for us in the short run?

Wouldn't that put us in a real bind, given the situation we have all over the world?

Mr. CARLUCCI. It would indeed. It would provide a most critical gap.

As I indicated at the outset, the most compelling need is additional force mobility; and we would lack that.

We might have the capability to deploy some of General Kelley's Marines initially, but we couldn't sustain them. I think we would find ourselves unable to support the kind of foreign policy this country seems to want.

Mr. HEFNER. The opinion is that if they were available at this very moment, you would have them lined up at two different

places; if you had the choice to make today whether you would take 747s or the C–5s, you would, without a doubt, take the C–5.

Mr. CARLUCCI. Yes, sir. Without a doubt.

Mr. HEFNER. I had the opportunity to observe the loading and unloading of C–5s at Altus Air Force Base, Okla. It was very impressive the speed they can do it.

I was impressed with what they can carry.

On these photographs would you ordinarily carry a tank of this size? The M–1.

Mr. CARLUCCI. Yes, sir.

Mr. HEFNER. Would you ordinarily carry M–1 tanks or is it just to show that you can carry the tanks?

General KELLEY. To say you would ordinarily do it, Congressman Hefner, is a tough question to answer.

We ordinarily would put up front those items of combat equipment that we would need based on the particular scenario. That scenario may indeed require tanks up front. If it does require tanks up front then yes, we need an aircraft that can carry tanks. What you get from the C–5 that you get from no other airplane is the total flexibility of moving all kinds of equipment, so it would totally depend on what you need up front in terms of combat power.

It may well be that the tank is the one critical thing that you do need.

Mr. HEFNER. Can you carry a tank on a 747?

General KELLEY. No, sir.

Mr. HEFNER. Can you disassemble it?

General KELLEY. If you give me a year to disassemble it, you can probably do it. You also have to realize you have to give me an inordinate period of time at the other end to assemble it under what may be combat conditions.

Mr. HEFNER. Can you carry a truck on a 747?

General BURKE. A two and a half ton truck, yes. A five-ton truck requires special handling.

General KELLEY. As an example, if we wanted to move the 101st Air Assault Division, it would take roughly six times longer to assemble those helicopters at the other end if they went by 747 than it would if they went by the C–5s.

Mr. DICKS. You already have C–5s, General.

Mr. ADDABBO. Does the gentleman yield?

Mr. HEFNER. No, I have not been asked to yield.

Mr. DICKS. Will you yield?

Mr. HEFNER. Not at this point.

I don't have a parochial interest in this other than I want to see us get the best for our money and the best for defense. What you are telling me is on the C–5, you can carry helicopters and they can be up for service very shortly after the plane lands. You can roll the helicopters off and they can be airborne shortly. You can carry them also on a 747. It would take some assemblage. If you were under attack from the air or artillery, you could be susceptible to an attack while you were assembling the helicopters?

General KELLEY. It is even more significant than that. Last year, as an example, when we deployed the helicopters on Bright Star, we were subjected to the vicissitudes of weather, the climate, the sand, the wind and the dust. It is the sum of these elements which

impair your ability to do major reassembly really in a combat theater.

Mr. HEFNER. Why is the big—I really don't understand what our controversy is here. We have an aircraft here that is built——

Mr. DICKS. If the gentleman will yield, I will tell him.

Mr. HEFNER. I yield.

INCREASED COSTS OF WEAPON SYSTEMS

Mr. DICKS. I think the issue here we are trying to get at is, we have 77 C–5s that have the capability to handle the outsized equipment we are talking about.

We are talking about a SAR that just came out at $454 billion to purchase 44 major weapon systems which was increased by $150 billion in just the last three months according to the Congressional Budget Office and the question is, can we afford the difference in these two programs?

We are talking about being able to get additional airlift capability at $6.2 billion less than adding the C–5 and that is the basic question.

Can we afford this additional capability? That is the issue I am trying to get to. We have C–5s that can handle outsize equipment already. When you talk about a light brigade or light cavalry, the kind of stuff the Marine Corps is going to be moving, 85 percent of it will be oversized or bulk.

You have enough capacity with your existing C–5s to handle the outsized equipment in a scenario to the Middle East according to CBO. What we need is additional capability. It doesn't necessarily have to be outsized. That is what the argument is all about. It is going to cost the taxpayers $6.2 billion.

General KELLEY. It is far different from that.

Mr. HEFNER. There is some discrepancy about cost here.

General KELLEY. Obviously, Congressman Dicks and I are at odds. If he thinks the 77 C–5s can carry all of the outsize cargo, I will stipulate that if you give me several months to do that, we could probably do it, but unfortunately, Congressman, I don't start the time clock.

The Soviets or some other adversary will. Therefore, my task is to get combat power to the theater as rapidly as possible.

I am saying to you in my professional opinion that 77 C–5s are woefully inadequate to carry all the outsized cargo we would need.

Mr. DICKS. Even if you used it more for that purpose?

General KELLEY. Even if we used it exclusively for that purpose.

Mr. CARLUCCI. We would still have a 50 percent shortfall. If you look at the charts we have handed out, they would show you.

Mr. HEFNER. I want to yield back.

Mr. ADDABBO. The gentleman from North Carolina has the time.

Mr. HEFNER. There seems to be argument or disagreement about costs. That is one of the things I am interested in. Mr. Dicks has one number he talks about. I believe you stated earlier this was a conservative estimate; that you don't believe——

Mr. CARLUCCI. Let me clarify it. There have been two cost figures cited—one by General Burke and one by me.

I was citing the cost figures for used 747s. General Burke was citing the cost figures for new 747s.

Mr. HEFNER. How many are available to us today?

Mr. CARLUCCI. I think we have located some 40.

Mr. HEFNER. Were they available to us six months ago?

Mr. CARLUCCI. I doubt it.

Mr. HEFNER. Six months ago this wouldn't have been an argument?

Mr. CARLUCCI. If our purpose is to buy used 747s, it wouldn't have been an argument. We argued our purpose was to get the best equipment for our military needs. That is a whole different issue.

Mr. HEFNER. How many new 747s are available today?

Mr. CARLUCCI. They would have to come off the production line. I don't know if there are any there.

General BURKE. I don't think there are any. There are no new ones.

Mr. HEFNER. Are there new ones scheduled to be delivered to Braniff?

General BURKE. There are new ones coming down the line that I don't think they have customers for.

To get to the cost difference we tried to make an evenhanded apples-to-apples comparison of costs between the C-5 and the 747.

We disagreed very substantially with the Boeing proposal for 48 747s which they argued was the equivalent to 50 C-5s.

Further, we would disagree with the estimate of what it would cost to buy and operate them.

Mr. HEFNER. Could you explain the discrepancy?

Mr. CARLUCCI. Just in round terms, for used 747s, we think it is about $2 billion over the 20-year life cycle and for new 747s about $1 billion over the 20-year life cycle.

General BURKE. I think a better way of looking at it is that we calculate that in fact 58 747s would cost the same as 50 C-5s over a 20-year life cycle. It would be an equal cost of forces, but in terms of getting the job done that needs to be done—moving the military forces where they are needed—the C-5 is a more cost-effective solution. It would do more militarily.

Mr. HEFNER. I yield back the balance of my time.

LOCKHEED AND BOEING CONTRACTS

Mr. ADDABBO. We are waiting for the gentleman from Florida, Mr. Young.

While we are waiting for him, the committee was advised that the Lockheed cost proposal was based on an April 1982 start and Lockheed extended its proposal through June 1, 1982 with no change in fixed price-plus economic escalation costs and no change in scheduling.

The June 1 date has now passed and it may very well be the initial funding for the airlift package will be included late this year in final congressional action for the 1983 defense bill. What level of changes in cost escalation do you anticipate may incur if the initial funding is provided late this year?

Mr. CARLUCCI. The same considerations would apply to both programs. You might get cost escalation because of inflation. We would have to re-evaluate both of their submissions.

General BURKE. We would expect no change because the C-5B program would build very largely on the activity that is under way now for the wing modification. They have a large base. Other than inflation we would expect no change.

Mr. ADDABBO. Until what date is the Boeing proposal a firm projection?

General BURKE. They didn't specify.

Mr. ADDABBO. That is open?

General BURKE. Yes.

Mr. ADDABBO. The Lockheed contract is described as being fixed price with economic escalations. What are economic escalations?

General BURKE. The Boeing proposal is the same. It is inflation.

Mr. ADDABBO. What does it mean? How high could we go?

General BURKE. You are in a better position to judge that than I. I hope it is coming down. We certainly see a lot of evidence of that.

Mr. CARLUCCI. We would have to build into the contract an escalator for inflation estimates. We do that in any number of contracts.

Mr. ADDABBO. In other words, when we commit ourselves to it whatever the economic figures are—if inflation figures go up, it automatically increases both contracts?

Mr. CARLUCCI. That is correct.

Mr. ADDABBO. The Lockheed contract has a fixed time. Boeing has given you an offer without any fixed time. Would Boeing give you a better price and might there be more savings on the Boeing proposal because they have not put a time limitation on it?

Mr. CARLUCCI. I suppose if you waited two or three years that might be the case. As General Burke indicated, the difference would be negligible in the time frame we are talking about. We are talking about a delta that results purely from inflation over a four- or five-month period.

Mr. ADDABBO. With the way the Congress is moving with the budget process and the potential for a continuing resolution, that time might be extended.

The gentleman from Florida.

Mr. YOUNG. Thank you, Mr. Chairman.

TYPES OF EQUIPMENT FOR AIRLIFT

Since I don't build airplanes in my district, all I want to do is what is right for the country. There seems to be a serious question in this discussion between the C-5 and the 747 what is right for the country.

Let me ask some questions that would help make up my mind. I would like to ask General Kelley and the Army General to pay attention to my questions because they go more directly to you.

That is, in the event of your deployment, whether it is a rapid deployment scenario, one, two, three, four, or five, which we have been looking at, what is the oversized equipment that you are going to need when you hit the ground?

General KELLEY. Well, we could get down to some detail, but if we are talking in terms in a normal deployment sequence one would have to or one would desire, Congressman Young, to bring in early in the game your air superiority because, as a commander, I would not want to enter a theater without having first established clearly that we had air superiority before you deploy further forces.

Within those equipments, we do have a significant number of Vans and air defense equipment associated with point air defense systems that require an outsize aircraft to lift them or, alternatively, significant, almost depot level maintenance men to be prepositioned to reassemble them once in the theater.

I don't think we can afford that kind of time.

For the combatant forces which would be arriving simultaneously or right on the heels of establishing your air defense umbrella, one would like to have the ability to move around the battlefield and I would say clearly one of the first things that I would want is the helicopter. That provides me with a variety of capabilities. It provides me with the capability to move forces, to establish clearly a perimeter or a security element for the introduction of follow-on forces. It provides me with an aerial platform that gives me a fire power capability. So I would say those are the kinds of equipments, all being outsized, or, alternatively, paying a huge penalty for unnecessary disassembly to fit on an oversize capable aircraft.

What we have is kind of a significant turn of philosophy, which is quite disturbing when I look at an aircraft like the 747. Historically, at least from my experience for 32 years as a Marine, we have always introduced combat forces first and then we have brought in the support forces.

What someone—what they are trying to have us accept—which I don't accept—is to bring in the support forces so we can then bring in the combat forces. I think that is a very significant point that probably has been overlooked in the discussion.

It will take significant numbers of people and significant amounts of equipment within the theater either brought in or prepositioned, to cope with reassembly of the outsize equipment that was disassembled to fit aboard an oversize aircraft.

Mr. YOUNG. General Kelley, the vans, the air defense equipment you need to establish and maintain air superiority, that is outsized and can be carried in the C-5?

General KELLEY. That is right.

Mr. YOUNG. Can it be carried in the 747?

General KELLEY. Not without significant further breakdown requiring a tremendous time and effort to reassemble it.

Mr. YOUNG. Could you give an estimate of the time required?

General KELLEY. Let me give you one example. I will take the CH-46 helicopter. I happen to know it because it is a Marine helicopter. It would take roughly ten men some 13 hours to reassemble if it is aboard a C-5. If you put it aboard a 747, you can go upwards to some 60 hours for reassembly.

Mr. YOUNG. General Thompson, I wonder if you might respond to basically the same questions from the Army standpoint?

General THOMPSON. Yes, sir. I think I just have to echo what General Kelley has said. During the initial stages it is vital to have mobility and firepower immediately available—artillery, air de-

fense—I would bring in the cavalry squadron along with attack and support helicopters. It is very important to minimize any requirement for assembling and that the equipments we bring in is in fact combat ready and that combat units are ready to fight when they hit the ground.

I would wait until days five or seven to begin bringing in my maintenance. That would include both ground and air maintenance, my engineers, and medical support. When we talk about disassembly—and I have some numbers here, sir, for the C–5, for example, the UH–1 disassembly is three to five hours; three hours for disassembly, five for assembly.

Some of our other times are just about as General Kelley has said.

The important thing is, that we minimize any time to assemble, especially if the deploying forces are expected to fight soon after arriving. When we talk about helicopters, there are requirements for special tools and equipment that are not normally found in the organization itself. We have a requirement then to test fly the aircraft to make them airworthy. Extensive disassembly of helicopters requires alignment and test firing of weapons systems.

All of this takes time. You don't want to be doing that if your object is to deploy a force ready to fight.

Mr. YOUNG. This calibration of guns, for example, in test flights, would not be required with the type of breakdown you would use on a C–5?

General THOMPSON. A certain amount of that is always required. It is lessened considerably if we use the C–5.

Mr. YOUNG. The possibility of having to do some of that is still there even with the C–5?

General THOMPSON. Yes, sir.

Mr. YOUNG. What about the C–17? I recognize the prepositioning of this type of outsized equipment is too expensive and we cannot afford to do that, but let's suppose we did just for the scenario we are talking about have it prepositioned somewhere like Diego Garcia. Could you move that with a C–17 without a great amount of breaking down and rebuilding?

General THOMPSON. Yes, sir. As I understand the C–17, it has an outsized capability. We would be able to do it exactly the same as the C–5.

RUNWAY LENGTHS

Mr. YOUNG. Let me ask you about the capability of the aircraft themselves.

We are not exactly sure where they are going to be landing. Do the C–5 and the 747 both require about the same runway, assuming the weight is the same?

General BURKE. The C–5 would require a less runway than the 747.

Mr. YOUNG. How much less?

General BURKE. It would depend upon temperatures and other things, but about two thousand feet.

Mr. YOUNG. Is that significant in the part of the world we are talking about, i.e. the runway availability?

Does 2,000 feet make a lot of difference?

General BURKE. It can, yes, sir.

Mr. YOUNG. Could you give an example?

General BURKE. It is unfortunately scenario-dependent. It is possible to devise a scenario where it is critical and also one where it won't be a factor. What it does is add that additional flexibility.

Mr. DICKS. Would you yield just on this point? Isn't it true——

Mr. YOUNG. Certainly.

Mr. DICKS. The C-5 engines have had a problem and the plane is underpowered, that even though it can land on basically a shorter field, it takes longer to take the plane off so you are not going to put it into a field that is shorter because it has a takeoff problem, isn't that correct?

General BURKE. Not in the way the airplane normally operates. You normally take off from a main operating base in the United States with a heavy load. They all have adequate runways. Then you land in forward bases which might be fairly austere and unload that cargo so you are empty taking off and it is not much of a problem getting out of there.

Mr. YOUNG. To keep the aircraft flying, assume a scenario, Southwest Asia, hot, desert, the same amount of pounds we have already established, and the outsized capability of one plane versus the other. Let's talk about weight.

How many flying hours can you get without major maintenance on the C-5 and/or the 747? Which one is maintained easier and can give you more flight hours?

General BURKE. I think we could get 12.5 hours per day from either airplane so long as we provide the proper spare parts, and equipment to do that.

Mr. YOUNG. That doesn't really become an issue then as far as deciding which is the better vehicle?

General BURKE. No, sir.

Mr. YOUNG. How about the fuel consumption on the two aircraft?

General BURKE. It is close, slightly lower for the C-5, but I would not call that significant.

Mr. YOUNG. Speed of the aircraft?

General BURKE. It is marginally faster for the 747, again not significant.

Mr. YOUNG. So we are getting down basically to the issue of size of the cargo that it can carry?

General BURKE. I think there are two things. One is the ability to carry the outsized cargo. The other is to operate in fields with limited facilities in which you have not had enough foresight to preposition the fairly elaborate equipment required to operate.

Mr. YOUNG. Or offloading or onloading?

General BURKE. Yes.

Mr. YOUNG. Can either of these aircraft fly from a gravel strip, for example, or land on a gravel strip?

General BURKE. The C-5 can. It is something we would have to be pushed to the wall to do. It can. It was in its original specification.

The 747 I think could not.

Mr. YOUNG. The C-130 can offload equipment in flight with the deployment of the chute that pulls the pallet out. Can either of these aircraft do that?

General BURKE. The C-5 can air drop. Again it is not something we have done often with it. It can do that.

Mr. YOUNG. Could you air drop outsized cargo?

General BURKE. Well——

Mr. YOUNG. Could you air drop a tank, for example?

General BURKE. I think not. You can air drop anything, but what condition it is in when it gets there——

Mr. YOUNG. I should have added in my question, and have it usable when it lands.

General BURKE. I think a tank would be too big.

Mr. YOUNG. What about a helicopter?

General BURKE. They are not currently packaged in a way that could be air dropped. Air drop is normally used for resupply of things like ammunition.

Mr. YOUNG. The fact the C-5 can air drop and the 747 can't is not really an issue?

General BURKE. There can be circumstances where it is desirable.

Mr. YOUNG. Mention what those circumstances might be.

General BURKE. That you wanted to resupply by air a large amount of ammunition to beleaguered troops, at some distance. The C-5 would be an excellent airplane for doing that.

Mr. YOUNG. We have 70 some C-5s now?

General BURKE. 77.

Mr. YOUNG. 77 C-5s. We have quite a few 747s available through CRAF?

General BURKE. We have the equivalent of 67 747 freighters available through CRAF. Some are 747s. Some are other airplanes. If you normalize them as 747s, it is equivalent to 67.

Mr. YOUNG. If we could clear this room and you and I could sit down and decide what we are going to do with the available money, whether to go to the C-5 program, the 747, or C-17, which would it be?

General BURKE. Given where we stand today, there is no doubt in my mind the C-5 is the correct answer.

Mr. YOUNG. Thank you, Mr. Chairman.

MEETING DELIVERY DATES

Mr. ADDABBO. We placed a great deal emphasis on the question of time of delivery. Has the DOD carefully analyzed the proposed contract delivery dates that Lockheed has given and have you carefully analyzed the ability of the subcontractors to meet those delivery dates?

Mr. CARLUCCI. Yes. I believe the Air Force has done that.

Let me point out that Lockheed has just completed the contract on stretching the C-141 and that has been ahead of schedule and under cost.

Mr. DICKS. Will the Chairman yield?

Mr. ADDABBO. I yield to the gentleman from Washington.

Mr. DICKS. According to a response for the record of the May 4th hearing of the Senate Armed Services Committee, the Department testified no evaluation of Lockheed's ability to produce its proposed C-5 derivative has been performed.

Specifically the response states "During the CX source selection, a manufacturing production capability review as conducted at Lockheed, Georgia, to evaluate the company's capability to produce its proposed C-5 derivative.

"However, that review was not conducted."

Why hasn't DOD done such a review?

We have the response right here if you would like to see it.

General BURKE. That was May 4th, you say? Since then we have conducted an in-house evaluation, and we maintain continous supervision of C-5A wing mod production through the resident Air Force production Review office at the Georgia plant.

Mr. ADDABBO. They move fast when they want to.

Mr. Ginn?

Mr. GINN. I don't think what we are arguing today is the capability of Boeing to build the 747 or Lockheed to build the C-5. What we are trying to decide factually is which plane will do the job. I think we have clearly got the facts that the C-5 is the plane of the hour.

Mr. ADDABBO. I agree with the gentleman from Georgia, but the question again is a matter of time and when it will reach the services. We had discussion on the C-17.

Mr. DICKS. Would you ask them to put that in the record, the new evaluation not ready on May 4th?

Mr. ADDABBO. Also has the evaluation looked at the question of which engine and whether the engines will be available at the time.

General BURKE. Yes, sir. Both the airframe manufacturer and General Electric, have been evaluated by the Aeronautical Systems Division. They were quite satisfied with what they found. They are confident both can produce it as they promised.

Mr. ADDABBO. Relative to the Boeing proposal, do you know if in the Senate's action, they took into consideration new or used aircraft as far as the 747 alternative was concerned?

Mr. CARLUCCI. I think their directive is for us to buy existing widebodied aircraft.

Mr. ADDABBO. Without any indication of new or used?

Mr. CARLUCCI. I don't think they specified. They say "available as surplus."

Mr. ADDABBO. Supply for the record the cost of procuring a new 747 as compared to buying a used one and retrofitting it to make it capable of being a military airlift.

[The information follows:]

[CLERK'S NOTE: The information is printed on page 103 in answer to a question for the record.]

Mr. CARLUCCI. Yes, sir. We gave you those general figures earlier.

Mr. ADDABBO. The gentleman from Pennsylvania, Mr. Murtha, for ten minutes.

AIRLIFT SCENARIOS

Mr. MURTHA. I would like to ask General Kelley about actual on the spot delivery of equipment. You have a brigade going to the Middle East, say. What are we talking about in the whole world?

In other words, the shortage of equipment we would have if we didn't have the C-5? Let's take the fleet we have right now to get a brigade over to the Middle East.

Can we talk about that in open session?

General KELLEY. You can't because you are talking about a specific scenario and you are also asking me to give you some very specific times involved.

We can provide that for the record.

Mr. MURTHA. That is very important.

[The information follows:]

By scenario, the Marine Corps airlift requirements are postulated for fiscal year 1982-87 as follows: ———.

Mr. MURTHA. Maybe you can answer it by using these charts. Give me details about what the Commander would not have.

As I undestand, that is a real problem. A commander on the ground would not have the equipment in time in the theater and do the job that he would need to do.

Mr. CARLUCCI. Mr. Murtha, may I elaborate on that? We have run some models which are unclassified based on the four CMMS4 scenarios. They show that using a brigade day measure, for what is needed to deploy and sustain a brigade for a day in theater in general, the airlift force with C-5B is about 35 percent more effective than the airlift force with 747s substituted for C-5Bs.

In scenario 4 the C-5 is 35 percent more effective; in scenario 3 which is a NATO scenario, the C-5 is 25 percent more effective; in scenario 2 the C-5 is 7 percent more effective; in scenario 1, which is a small deployment to Southwest Asia, the C-5 is 16 percent more effective.

That is to say in scenario 1, for example, the DOD program would give you 50 brigade days in theater until sealift is effective compared to the 43 by the Boeing proposal.

Mr. MURTHA. Mr. Secretary, as I understand there is some equipment that you cannot haul on the 747 or at least that would have to be dismantled to the point where the operational commander would have to take an awful lot of time to reassemble?

Mr. CARLUCCI. There are 146 types of equipment like that.

Mr. MURTHA. You are talking about shortages that are critical to the operating commander in the field that would not be available to him in the time frame that he needed it in order to be in contact with the enemy?

Mr. CARLUCCI. That is correct, sir. If you look at the charts you have before you, you will see there is a very substantial late arrival under the Boeing program.

Mr. MURTHA. Even if you utilize the 747s with the small equipment, you still, with the 77 C-5s, the number of C-5s that we have today, you would have this shortfall of equipment that is absolutely essential to a commander on the ground?

Mr. CARLUCCI. A very substantial shortfall, yes.

Mr. MURTHA. That is all I have, Mr. Chairman.

Mr. DICKS. Mr. Chairman?

Mr. ADDABBO. Will the gentleman yield to the gentleman from Washington?

Mr. MURTHA. I will yield to the gentleman from Washington.

Mr. ADDABBO. The time belongs to the gentleman from Pennsylvania, Mr. McDade.

AIRLIFT, SEALIFT AND PRE-POSITIONING

Mr. MCDADE. Thank you, Mr. Chairman. I would like to change the focus a little bit for my own education. We have a lot of issues in front of the committee on the three components of mobility: Airlift, sealift, prepositioning.

I am sure they present for the DOD, as they do for this committee, a lot of difficult decisions.

I am trying to get some fix on how the Office of the Secretary decides on the proper mix on level of funding airlift versus sealift versus prepositioning.

Could you describe how you go through that procedure for the committee and how you arrive at the decisions?

Mr. CARLUCCI. I would be glad to, Congressman McDade. We start about a year ahead of the budget presentation, the budget cycle, with an analysis of the threat, and putting together the Defense Guidance.

That guidance is put together by a group known as the Defense Resources Board, which I chair; the Secretary attends almost all Board meetings, which include the service secretaries, the service chiefs, various under secretaries and assistant secretaries in the Office of the Secretary of Defense.

From that guidance, we then task the services to come up with specific weapons systems mixes. They are told to put emphasis where needed to meet the defense guidance. For example, the Air Force should plan for so much strategic airlift and the navy should plan for so much rapid sealift.

All three services then put together what are called their POM. The POMs are submitted for review right about now; we then convene for about a three-week period. We will start convening next week and examining the POMs to measure the service weapons proposals against the Defense Guidance.

In that way we provide a balance between airlift and sealift and prepositioning in the mobility area to take that as an example.

Mr. MCDADE. As we look at the demands on the budget for the strategic airlift right now, just why is it not a cost effective measure to preposition outsized cargo around the world with less cost and scale back on the heavy requirement to invest huge dollars in strategic airlift capability?

Mr. CARLUCCI. They aren't either/or's. We do think we need to preposition more. We have requested the Congress more prepositioning ships. Even if you are prepositioning for Southwest Asia, around Diego Garcia, it still takes time to get the ships cargoes to shore. We think we can accommodate about ninety percent of our needs through prepositioning.

That additional ten percent is very critical.

Mr. McDADE. In the mix, the decision is, you ought to attempt to achieve ninety percent preposition of outsized cargo.

Mr. CARLUCCI. We don't preposition every outsized item because some of it is just not cost effective to preposition. The equipment is too expensive.

Mr. DICKS. For example, Mr. Secretary, what kinds of equipment are too expensive?

Mr. CARLUCCI. Helicopters would not be practical.

Mr. DICKS. Why? Because you have to maintain them, keep them up; they are subject to climate, all the rest of it?

Mr. CARLUCCI. That is right. We do need something to fill that gap. That something turns out to be General Kelley's or General Thompson's most critical need right at the outset of combat. Like helicopters, that is what we need the outsized cargo for.

Mr. McDADE. Even though it is ten percent of the need, it is the critical ten percent that forces you to go to the strategic command and get it there right at the point of attack in a hurry?

Mr. CARLUCCI. That is the case, yes. Of course, you have to have a substantial number of airplanes to make up the same volume as one ship.

Mr. McDADE. I have heard, and I do not know, that even if—and my friend from Washington will probably know the answer quicker than I can ask it—even if you went the 747 route, that although you can make certain modifications to it, on the side door, you cannot, without changing the frame, make modifications or otherwise you have to tilt the cargo into it. Is that an accurate statement?

Mr. CARLUCCI. Let me ask General Burke to answer that.

General BURKE. The side door of the 747 is slightly larger than the nose door, but unfortunately things that are bulky tend also to be long so most items that we load—like a helicopter—will have to come in that nose even though the side door is wider; they can't make that turn.

Mr. McDADE. It cannot make the turn through the side door so you have to move them in through the nose?

General BURKE. Yes.

Mr. McDADE. So, for all practical purposes, whatever you do to that side door on a 747 with the kind of cargo that has a long-carrying box or whatever, you simply cannot move it that way?

General BURKE. Yes, sir. Boeing has looked at ways of enlarging that nose door, but unfortunately it would require relocation of the crew cockpit and just a substantial redesign of the airplane.

So that is not felt to be practical.

Mr. McDADE. It is not even thought to be an option?

General BURKE. No, sir.

Mr. McDADE. Thank you, Mr. Chairman.

CHANGES TO C–5

Mr. ADDABBO. Relative to the changes on the C–5, the Military Airlift Command recommended 240 changes which we understand the contractor has included in his proposal, but since that time they have also proposed 18 other possible requirements.

Are those 18 changes included in the contractor's proposal?

General BURKE. They are not included. We allowed $500 million in our budget we submitted to you for engineering change orders to address things that we would think would be cost effective. We will look at each of those individually.

Mr. ADDABBO. $500 million is set aside for those 18 changes?

General BURKE. Or any others that are unforeseen.

MODIFYING 747'S

Mr. ADDABBO. How long would it take to modify an existing 747 to make it capable of handling military cargo?

General BURKE. I think you could do what we call the CRAF modifications, strengthening the floor, in about 90 days.

Mr. ADDABBO. For the purpose of closing debate, the gentleman from Washington opened, so we will have the gentleman from Georgia close for ten minutes and then the gentleman from Washington.

Mr. DICKS. Mr. Chairman, I would hope that we could continue. I really don't think we have had a chance to present our side of the case. The Air Force and the Secretary are here.

They have a chance to present and answer all the questions. I would like to know if we could continue for a little longer than just 12 o'clock today?

Mr. ADDABBO. We can go to 12:30.

The gentleman from Georgia.

Mr. GINN. Thank you, Mr. Chairman.

Mr. YOUNG. Mr. Chairman, might I inquire if we are going to do that——

Mr. DICKS. I don't expect all the time.

Mr. YOUNG. And our two distinguished colleagues are going to close——

Mr. ADDABBO. No. The gentleman from Georgia has to leave at twelve.

The gentleman will be recognized for ten minutes at this time.

The gentleman from Washington will be recognized for ten minutes and we will go down the line with equal time.

Mr. GINN. Mr. Chairman, thank you very much. I shall not require the entire ten minutes and will yield back some of that time so my other colleagues can ask additional questions.

Mr. Chairman, let me simply say this is the fifth hearing now in which this specific subcommittee has discussed this controversial issue.

We have heard again here this morning—and I think in a very, very fine, factual presentation, that there is unanimous support in the Department of Defense.

The Deputy Secretary of Defense, the Air Force, the Marine Corps, the Army, all sitting at the same table say that if they had their druthers, they would want the C-5.

So I think very simply put, Mr. Chairman, our options are to buy a military airplane designed for military equipment which we continue to produce, or to buy a commercial airliner which has been rejected by the very industry for which it was specifically designed.

If the demand for this commercial substitute still existed in the commercial industry, we would not be even faced with this decision

today. So what I would suggest, Mr. Chairman, is that we get on with the business of making the decision that is before us.

BAILOUT LEGISLATION

If the commercial aviation industry is in deep trouble, which it obviously is, then why does not the industry come in with a bailout piece of legislation to give us an opportunity to consider that?

But let's not attempt to confuse the issue.

The gentleman from Washington says we bailed out Lockheed. I would say to him that was a specific piece of legislation, considered by the Congress, I would point out to him that Lockheed has not defaulted on that plan which was adopted and approved by a majority of this Congress, to the credit of this Congress and to the Lockheed Corporation.

PLANE TO MOVE OUTSIZE CARGO

So I would say then, Mr. Chairman, that we have had ample opportunity now to clear the record. We have all had the opportunity to ask our questions, so what we are faced with is which plane will the Congress approve for the Defense Department?

Will we go with the C-5 or will we go with the 747?

Mr. ADDABBO. Or a mix?

Mr. GINN. The 747 is a good plane for carrying people. I have ridden on it. I support it for that purpose. We can use the 747s as needed through the CRAF program which is already in effect. The question then before us, Mr. Chairman, is what does the military need to get the job done, to move outsized cargo timely to any place it is needed?

The facts clearly support the C-5. So then I would close my brief remarks, Mr. Chairman, by thanking you for once again giving us all the opportunity to pursue this issue.

I certainly want to thank and express my deep appreciation to Secretary Carlucci and General Allen and General Burke and General Kelley and General Thompson for being here today and for giving us factual answers to the questions which have been asked of them by this subcommittee.

Mr. Chairman, I yield back the balance of my time.

Thank you very much.

Mr. ADDABBO. The gentleman from Washington, Mr. Dicks?

Mr. DICKS. I would just point out to my colleagues that it is exceedingly difficult when you don't have a chance to testify as I didn't today—it is difficult to try to present your side of the case on a very important issue to our country.

I have spent a considerable amount of time looking at this issue. I realize that the country needs additional airlift capability. In making our decision—the best decision would be to buy some existing wide body aircraft—commercial wide body aircraft for the short term and to move ahead on the C-17, and I agree with the Air Force's presentation to Secretary Carlucci that it is a fine airplane that can handle both inter-theater and intra-theater capability.

The CRAF program, Mr. Secretary, the CRAF enhancement program has been a disaster. It hasn't worked. By trying to point out that that should be utilized, I think you raise a very false hope.

747'S CONVERTED TO AIR FREIGHTERS

With the 747s you are talking about passenger planes that are going to be converted to air freighters. You are not going to leave them as passenger planes. You are going to convert them to an air freighter which gives them additional capability that they would not have if they came out of the CRAF program as passenger planes.

Mr. GINN. Will the gentleman yield for one question?

Mr. DICKS. No, I will not yield at this point, but I will at the end.

C-5A PROBLEMS

The biggest thing I think we are overlooking here is that the C-5A has had a reputation from the very start as a plane that had very serious problems.

The C-5 had tremendous cost overruns, $2 billion in cost overruns; the plane has to be rewinged at a cost of $1.5 billion.

The C-5 has never been under a surge test, utilized by 12.5 hours a day as it would have to be in combat situations, and I think, General Kelley, you ought to think very, very seriously about whether you are going to be able to get the equipment to those boys because this plane has serious technical problems that are still not answered.

It has a mission capable rating of around fifty percent where the 747 has a mission capable rating of about ninety percent.

You are also talking about an airplane that takes 75.6 man hours per flight hour for maintenance. It is one of the most expensive airplanes we have to maintain. That is the kind of thing that I wish we had a chance to get across to our colleagues.

What we are talking about here is a plane that has always had technical problems, a plane that has cost the taxpayers billions more than the Air Force said it would, a plane that we still don't know whether under combat circumstances it is going to perform very well.

COST COMPARISONS

Now, what we are saying is, listen, you have 77 of those. Let's get something in the short term that we can get, based on the Boeing proposal, three years earlier; we are talking about a plane that would cost us $40 million apiece for used aircraft. The figures the Chairman quoted today say the C-5 will cost about $182 million, over four to one in ratio.

The point is, we simply cannot afford every gold-plated item the Secretary of Defense comes up with. The SAR has just gone up from $304 to $454 billion to purchase the 50 major weapons systems that we have got to procure.

That is up $150 billion in the last ninety days October to December 1981. With that kind of an escalation in the cost of weapons systems, we are trying to come to you with a proposal that will save the taxpayers a considerable amount of money; a proposal that you wouldn't even consider, and I think that is wrong.

The people who proposed this tried to come in and the Deputy Secretary of Defense and the Secretary of Defense refused even to

meet with them to consider this because they had already made up their mind that they were going to have a second Lockheed bailout.

That is what we are talking about right here today.

I think we have to get this out in front. We don't know for sure about the cost numbers you are presenting. We don't know because you haven't completed and presented to this committee in my view a clearcut, hard set of numbers that show that you can produce this plane at the cost that you are talking about.

We have firm fixed price guarantees on this other plane that can be used. We get down to the question of military utility. We are using this 747. It has been used in military exercises and has performed very, very well.

Mr. Kingston, General Kingston was here a few days ago and testified that 94 percent of our equipment will be either prepositioned or sealifted, as it should be.

General Burke testified in a press conference in January that we shouldn't be moving tanks by airlift, that that isn't the right priority.

We should be moving tanks by ship or we should have those tanks prepositioned as we do with POMCUS in Europe.

What I am suggesting to you is at a time when we have to cut back on defense spending, when every budget being proposed to this Congress states that we have to make cuts in defense, that this program can save us approximately $6.2 billion and we can get it sooner.

I think the Air Force and the Secretary of Defense should give it more consideration than they are giving it. I think this decision was imposed on the Air Force. Clearly the memo I put in the record today indicates that the Air Force, as late as January of this year, wanted the C-17.

I believe if you talked to people at MAC, General Jim Allen, you will find there are still a large number of people in the Air Force who prefer the C-17.

What we are talking about is a short-term chance to improve airlift capability with existing wide bodied aircraft that are available at approximately one-fourth the cost to the taxpayers.

I just cannot believe that at a time when we know we have to make cuts in defense that you can come over here and tell us the C-5 is the only way to go—especially—where are my numbers on the programs?

Let's look at the problems you have to fund. The F-15, $27.4 billion; the F-16, $33.1 billion; the B-1, $28.3 billion; the MX, $35 billion; eventually the ATB.

You have a list of programs right here of $148.4 billion. Now, what I don't understand is, when you have a chance to add additional airlift capability at a great savings to the taxpayer and with additional capability being added to your force in the oversized area where you have tremendous shortfalls as well, why you are not willing to give this proposal serious consideration.

Mr. ADDABBO. Is that your final question?

Mr. DICKS. Yes.

Mr. ADDABBO. That is his final question.

Mr. CARLUCCI. The answer is, of course, we have given it serious consideration. If there is some implication that because the Secre-

tary and I didn't meet with the contractor, we didn't give it serious consideration, that reflects a serious misunderstanding of how the Defense Department operates.

Indeed, if the Secretary and I were to meet with every contractor, we wouldn't be doing anything else. We haven't met with Lockheed on this.

Mr. DICKS. Not even for strategy sessions in the morning?

Mr. CARLUCCI. We did not have any contact with the contractors prior to the decision.

That is the proper function of the Air Force and they have carried it out. I think they have examined the capability of Lockheed to produce this aircraft. We have heard them state that they think the C-5 is a capable aircraft.

It is an aircraft that has been flying. The people that fly it certainly think that it meets——

C-5 SURGE TESTS

Mr. DICKS. Has it ever gone under a surge test, Mr. Secretary?

General BURKE. The C-5 has been tested in actual conditions at increased flying hours. Certainly we flew it extensively in the 1973 Mid-East War, certainly in Southeast Asia.

Mr. DICKS. In the Mid-East War you carried eight pieces of outsized cargo, by the way. Most of the equipment carried was oversized, high value items the kind of things you are probably going to be using airlift for, I would assume.

General BURKE. I think the Israelis had a different set of requirements than we do. I don't think that is an even-handed comparison.

Mr. DICKS. The Congress has tried repeatedly to get the Air Force to put the C-5 under surge test and the Air Force has consistently refused to do it because of the rewing problem. When this plane was first built, it was supposed to be able to fly for 30,000 hours.

Then, because of the cracks in the wings, that was reduced down to 7500 hours.

Now this plane has just been a problem from start to finish. That is why I go back to my initial point, Mr. Secretary: How could you possibly make the decision to go back and build more of these planes when it has had such a dismal record? It has been a failure, and I don't see how you could go back, when you have the C-17 which the Air Force recommended to you, when it is a good quality airplane and make a decision to build the C-5 instead of the C-17. I can't understand it on the merits.

Mr. ADDABBO. The gentleman from Florida, Mr. Young.

Mr. YOUNG. Mr. Chairman, these are both good companies. They are giants in the industry. They have both played a very major role in aviation history and I don't think anyone should or would want to make a decision based on how they feel about the particular companies involved.

I think that decision has to be made based upon the job that has to be done and what is the best way to do it. I want to——

Mr. DICKS. Would my colleague yield?

Shouldn't it also be made on whether the plane we are talking about can actually perform in combat under surge conditions? Shouldn't we also know that?

Mr. YOUNG. I think that is what I said.

The job that has to be done and the best way to get the job done.

General Kelley, in the first questioning period that I had you made a comment that we hadn't heard before to my knowledge on the question of the need for immediate outsized equipment.

EQUIPMENT REQUIRED TO ESTABLISH AIR SUPERIORITY

You talked about the ability to establish and maintain air superiority which obviously is crucial to the success of any mission and certainly crucial to the protection of the lives of the people involved.

I would like to pursue that just a little more with you again, to be more specific, on the type of equipment that you would require to establish that air superiority that would be moved by this type of aircraft and would be, in fact, outsized.

General KELLEY. Let me, Congressman Young, take a quick crack at it and ask General Allen or General Burke if they want to expand on it.

I am going back to my experience as a Marine where, of course, in our natural habitat, the amphibious habitat, air superiority is an absolute essentiality.

I feel you should only airlift forces when there is a potential at the other end for combat or, in other words, people who don't like you and are bent on doing bad things to you.

So, therefore, one of the greatest threats that I know to any ground commander is the threat that comes from the air. It takes time to move ground forces, but air can do serious damage rapidly to any ground commander, particularly as he is building up his force.

One of the first things that we have to bring in are our air superiority aircraft, be they F-4's, F-15s, F-16s, or whatever; and with that has to go an air defense or early warning network.

This includes all of the radars, all of the ground support equipment, all of those things necessary to develop this air superiority or air protection envelope, if you will.

Within that bag of equipment there are significant numbers of outsize equipments. General Burke may want to elaborate on that, or, if not, we can provide the specificity of those equipments, the radars, the vans, the boxes, etc., for the record.

Mr. YOUNG. I think it is important we know what those pieces of equipment are and which of them are outsized. Again, would you like to speak to that?

General BURKE. I think General Kelley covered it very well in general terms. I think perhaps for the record we ought to give you the precise specifics.

[The information follows:]

The following are air defense/air superiority-related units of the type deployed in CMMS Scenario II which contain outsize equipment. This list gives a description of each outsize piece of equipment, the dimensions that makes it outsize, and the quantity of each piece in a single unit of that type. The Marine Corps units possess equipment similar to the Army and Air Force equipment listed.

BEST DOCUMENT AVAILABLE

Vehicle	Outsize dimension (height in inches)	Quantity
Army I-Hawk Battalion:		
Info coord centl	131	4
Platoon CP	132	4
MPQ-46 radar	132	8
12-ton van	146	1
6-ton elec van	133	3
6-ton rpr van	132	6
6-ton shop van	129	1
Shop equip trailer	130	1
5-ton exp van	138	3
2.5-ton shop van	130	3
5-ton cargo truck	141	1
5-ton cargo truck	118	1
Army Chaparral/Vulcan self-propelled battalion:		
Tracked recovery vehicle [1]	115	4
2.5-ton shop van	130	4
Air Force comm-elec comm complex:		
Truck w-TRC 97	108	5
Mobilizer load	113	1
Mobilizer load	114	2
Air Force comm-elec single-wing TAB:		
5-ton wrecker	106	1
Semivan	142	1
Air Force comm-elec DST Lo-speed: AN/TYC 8 van	132	2
Air Force comm-elec tech control fac: Tech control MSC 22	128	1
Air Force Tac Air Control Center (TACC):		
Mobilizer load	107	2
Mobilizer load	108	2
Mobilizer w/shelter	120	5
Mobilizer w/shelter	132	1
Air Force Air Support Operations Center (ASOC):		
5-ton exp van	136	2
5-ton wrecker	106	1
Air Force Combat Reporting Center (CRC):		
TSC 60 van	108	1
10K vehicle	119	1
5-ton wrecker	113	1

[1] 124 inches wide.

Mr. YOUNG. General Thompson, would you like to be more specific at this time on the type of equipment that you would have to have on the ground for this air superiority mission?

General THOMPSON. Sir, I think General Kelley said the same kinds of things we would be concerned about in the Army.

Mr. YOUNG. Much of this is outsized?

General THOMPSON. Yes, sir. Air defense artillery is a good example. All of the supporting radar, all the ground support equipment, almost all of it is outsized equipment.

Mr. YOUNG. Please provide for the record more specific information.

[The information follows:]

The Army commander counters the enemy air threat by employing a series of air defense weapons. These are mutually supporting and provide both long and short range coverage. The radars, control vans and firing units associated with many of these systems are typically bulky and heavy. Air defense systems are all airlift candidates, because it is essential to immediately defend against an enemy threat from the air.

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For example, the Platoon Command Post is a component of the Improved Hawk System. It is outsize and can only be transported by C5. Future air defense systems will place even greater demands on airlift.

For example, the Division Air Division Gun (DIVAD) will provide units with a mobile air defense capability. However, the DIVAD is also outsize and only transportable by C5.

The Patriot will substantially improve air defense protection. One battalion will typically be included in the deployment of the RDJTF. To move one battalion by C5, however, requires 47 aircraft. Patriot is also deployable by C141, but extensive disassembly, reassembly, and special equipment are required. Some of this equipment can only be moved by C5. More significantly, moving one Patriot battalion by C141 requires 158 aircraft.

KC-10 CAPABILITY

General ALLEN. I might add one thing, Mr. Chairman.

The KC-10, which is part of the program that is in the President's budget that we are discussing today, does have a particularly favorable characteristic of escorting fighters into a deployment area.

That is, it can, for example, escort F-16s with refueling and at the same time carry their associated equipment and maintenance personnel in a manner that would require a large number of other aircraft.

That is not an outsized issue. It is an issue of the refueling capabilities and the incremental cargo space in the KC-10.

This addition to our force also contributes to the earliest establishment of air superiority by allowing one to have a particularly effective way into the fighting area.

Mr. YOUNG. I appreciate that. You and General Kingston have convinced me on the KC-10 as to its effectiveness and its need.

I don't need any more convincing on that particular piece of equipment.

Thank you very much.

Mr. MCDADE. Would you yield to me, Bill?

Mr. YOUNG. Yes.

Mr. MCDADE. There have been comments made, for example, that the C-5 is a failure as an airplane. Would you respond to that?

Mr. CARLUCCI. Let me ask General Allen to comment on the C-5.

General ALLEN. Clearly we understand the C-5. It is in the fleet. We have had troubles necessitating the rewinging, but we are very satisfied with that aircraft.

It is performing very well. It has an outstanding record. We have not done the surge tests in the way that has been suggested for the simple reason we don't believe they are necessary. We can show our capability of surging that aircraft and are limited by spares which we have then corrected in our budgetary submissions.

Mr. DICKS. Will you yield just briefly?

Mr. MCDADE. All right.

C-5 MAINTENANCE PER HOUR

Mr. DICKS. Are you satisfied with the maintenance per hour it takes to keep this plane flying?

Thank you.

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General ALLEN. The aircraft clearly requires more maintenance hours per flight hour than does a 747. There are a number of reasons for that, but the question is this: can we maintain it well enough to do the job we have to do and do the surges we have to do?

The answer to that is yes, we are maintaining it well. It is flying very well indeed. It is meeting our mission capable objectives.

Mr. MCDADE. You are testifying this is a mature aircraft? You have a lot of experience with it?

General ALLEN. Yes, sir.

Mr. MCDADE. You have tested it in various environments?

General ALLEN. The point I really want to try to get across is—this is a unique airplane. There is no other plane like this in the world. It is the envy of the world. This aircraft is an aircraft which professionals all around the world crowd around when it lands anywhere, recognizing the enormous capability it gives the United States to move equipment rapidly.

As we face the problems we face globally and the necessity to respond to unexpected situations of major proportions, there is nothing like this airplane that gives us a flexibility and capability to do that.

So we are pleased with the airplane. We rely on it very, very heavily. We have taken those steps necessary to assure us we can meet our wartime goals.

Mr. MCDADE. Mr. Secretary, do you want to comment at all?

Mr. CARLUCCI. No. I think General Allen's comments are fine.

Mr. MCDADE. You are all unanimous in that position?

Mr. CARLUCCI. We agree with it.

Mr. GINN. Will the gentleman yield to me?

This business about the dismal failure, I think, is kind of a low blow. I can understand Mr. Dicks' interest in the 747. I commend him for it and salute him for the effort he is making for it. To say the C-5 was a dismal failure and to say to a four-star general we know more about what he needs to get people and equipment somewhere I think is getting this hearing on to the wrong track.

The C-5 was used during the Mid-East War, as you pointed out. No less a person than Golda Meir herself thanked this country for having a plane like the C-5.

C-5 REWINGING

I think the problem we need to clear up is the rewinging business. It is my understanding the original design of the C-5 was changed for cost considerations and we are now going back and putting the wing back on the plane that was originally designed for the plane, is that correct?

General BURKE. That is essentially correct.

Mr. GINN. Thank you very much. Thank you for yielding.

Mr. ADDABBO. The gentleman from Florida.

Mr. YOUNG. No questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Florida, Mr. Chappell?

Mr. CHAPPELL. Mr. Chairman, I don't believe I have any further questions.

Mr. ADDABBO. The gentleman from Pennsylvania?

Mr. MURTHA. No questions.

Mr. ADDABBO. Does the gentleman from Washington state have further questions?

747 COSTS

Mr. DICKS. Yes.

Mr. Mosemann, in a letter of May 7, indicates that the DOD claims acquisition costs of the 747 would be $500 million higher than guaranteed in the Boeing proposal. What are the reasons for this difference?

How were they developed and what specific studies in the Boeing proposal justified them?

General BURKE. We did the same thing with the Boeing proposal we did with the Lockheed proposal. They did a bare bones program, which is the normal practice, to which we have to add spares, support equipment.

For instance, the Lockheed proposal was $4.9 billion in 1981 dollars. We have done the same sorts of things with the Boeing proposal.

Mr. DICKS. The biggest factor in the cost difference involves operating and support costs. Boeing has included as part of its offer a guaranteed 20-year operating and support cost not to exceed $5.99 billion.

The DOD insists on using Air Force personnel for support despite substantially higher costs.

Does the Air Force use contractor support for its current C-9, KC-10 and E-4 fleets?

General BURKE. Yes, and likely we will stay with the C-9 and the E-4. As we increase the number of KC-10s, we are going to reexamine whether that is a proper thing for that airplane.

Mr. DICKS. Has DOD done any specific analysis that led to rejection of the Boeing offer?

General BURKE. I think you have to look at the Boeing offer very carefully.

First, you say they guarantee, but there is no penalty associated with that guarantee. It is simply an assertion they will do it. It doesn't say if they don't do it Boeing will then forfeit monies or whatever.

I think it has to do with things like guaranteeing that the engines will have a given fuel consumption under certain conditions. We don't question any of that.

They guarantee that they will—again without penalty—maintain the airplane for so many dollars per hour, but they don't say what they will and won't do in that maintenance package. Until you had all the specifics of it. You can't evaluate it.

Mr. DICKS. So the bottom line is you haven't done the analysis?

General BURKE. We analyzed what was given to us.

Mr. DICKS. Does the Air Force see this type of support as producing cost savings on the KC-10?

General BURKE. Initially, clearly it does; at small levels of KC-10s. Our commitment was for the first five years.

Mr. DICKS. Major Willey on May 24th testified that the initial study on contracting logistics support versus organic support for

the KC-10 shows savings on the order of 50 percent for going contractor logistics support with a known DC-10 worldwide fleet versus organic use.

General BURKE. For the first five years I think that is true. I think the reason that is true, and I participated in that source selection, what we call the ATCA program, where the 747 and the DC-10 were competing, we had two competitions.

One was to buy the airplanes and another was to maintain the airplanes.

The maintenance costs were a factor in which one you bought. So both Boeing and McDonnell-Douglas bid very competitive rates to support their own airplanes.

We had independent companies, American Airlines, E Systems, Flying Tigers who bid to support both of them in much higher numbers than Boeing was to support the 747 and the McDonnell-Douglas bid to support the DC-10.

I think that is a one-time good deal. I will be amazed if we get anything like those numbers the next time around.

Mr. DICKS. You did get them.

Isn't there also a worldwide fleet and support system for 747s?

General BURKE. Yes.

Mr. DICKS. DOD states to be fair we should use contractor support for both or organic support for both.

This is never stated for the KC-10. DOD does not note the major difference; these commercial aircraft already have a support network in place.

Mr. Carlucci, arguing with the same logic, would you contend we should also add rewinging costs to the 747 because the C-5 has this problem?

Mr. CARLUCCI. No, of course not.

I will let General Burke speak to that.

Mr. DICKS. If Boeing has guaranteed support costs, if it worked so well for the KC-10 and no specific analysis has been done on the Boeing offer, what is the detailed rationale for its rejection and how was it developed?

General BURKE. It was rejected largely on the grounds that it does not meet the military requirement.

The 747 is a fine commercial freighter. Were that the job at hand——

Mr. DICKS. Why was the support offer rejected?

General BURKE. I don't understand how we can reject the support offer when we don't have the airplane.

Mr. DICKS. In developing the cost estimates though, you rejected—it to—get your number on what the Boeing proposal is supposed to cost.

You rejected their cost offer for support and imposed an Air Force support program which is substantially higher.

What I am getting to, Mr. Secretary, in all of this is, what we are really talking about is the Air Force is taking and placing a worst case assumption on the Boeing proposal and giving a best case analysis on the C-5 proposal.

In order to squeeze the cost differences down. Now, based on the proposal made—and it was testified the other day to by I think,

Mr. Mosemann, if you take the Boeing proposal at 48 airplanes, there is a $6.2 billion difference in cost.

Now, you suggested——

General BURKE. Mr. Mosemann did not agree with that number. I don't agree with it.

Mr. DICKS. That is because you changed all the Boeing assumptions.

General BURKE. I changed all the Lockheed assumptions too. We did it in a very even-handed way. It is most unusual for us to accept any contractor's proposal at face value.

Mr. DICKS. You seemed to accept the Lockheed one at face value, especially when the——

General BURKE. I just pointed out we added a billion dollars to the Lockheed proposal.

Mr. DICKS. And six billion to the Boeing proposal.

FUEL CONSUMPTION COMPUTATIONS

I am told DOD developed its fuel consumption numbers by averaging the fuel consumption of the E–4, which has a considerable amount of electronic equipment and with fuel consumption figures from three commercial 747 cargo carriers carrying full 90-ton loads both ways. I underline "both ways."

How was this formula for computing 747 fuel consumption developed? Is it fair?

General BURKE. The answer to the question is yes, it is fair. We computed the fuel consumption of the 747 by the same factors we compute the fuel consumption of the C–5 and we factor in our E–4 experience, commercial airline 747 experience, and overall experience in operating transport aircraft.

Mr. DICKS. Why were full loading of all flights used when this is not typical MAC usage?

In other words, you take cargo there, but you don't have anything when you come back.

Remember, you just talked about that on the C–5.

General BURKE. I am not sure that is the case.

Mr. DICKS. That is the information we have. In order to get the fuel consumption numbers up on the 747.

General BURKE. I don't think so.

Mr. DICKS. Why don't you put it in the record?

[CLERK'S NOTE: The information is printed on page 105 in answer to a question for the record.]

Mr. DICKS. Isn't fuel consumption part of the Boeing fixed price guarantee on support costs? If so, doesn't this mean the disagreement on figures is relevant only if DOD rejects contractor support?

General BURKE. No, sir. All Boeing guarantees is at a given power setting, given temperature and given weight, the engine will consume a given amount of fuel, and there is no dispute with that.

AIRLIFT SUPPORT FOR RDF

Mr. DICKS. Let's go back to General Kingston testified very recently before this committee that between 90 and 94 percent of all the tonnage to be moved for the RDF would either go by sealift or be prepositioned.

He stated between six to ten percent would be airlifted. Of that eight to ten percent, and this is particularly important for General Kelley, 15 percent is outsized cargo. So, of the total tonnage for the RDF, about two-thirds of one percent, to 1.5 percent, would be outsized airlifted tonnage.

Do you plan to routinely move tanks by airlift?

Mr. CARLUCCI. I think General Kelley answered that. He said it is scenario-dependent. The answer is no, but you are mixing apples and oranges.

When you are measuring weight, your constraint is volume. Many of our cargoes cube out before they weigh out. Since you have three times cited General Kingston, let me read parts of a cable I have just received from General Kingston. It says,

Recent Senate budget decisions indicate the Department of Defense may have to accept the Boeing 747 in lieu of additional C-5s.

Because of these decisions the RDJTF is concerned and believes it is necessary to reiterate our position on the need for additional C-5 aircraft.

The C-5 is a proven combat airlifter that is preferable for the following reasons:

He then gives a whole list of reasons which I would be glad to submit for the record.

[The information follows:]

The C-5 is a proven combat airlifter that is preferable for the following reasons:

Superior Outsized Cargo Capability: C-5 has roll on/roll off self contained capability; compatibility with current Air Force material handling equipment; inflight refueling capability; ability to operate from austere airfields because of lower ground pressure generated from its numerous wheels; spare parts; tools and publications are in stock; existing training program; experienced crews on active duty; and exploitation of known maximum life expectancy established following the wing modification. The C-5 is the only aircraft capable of lifting certain outsize cargo (particularly tanks), strategically or tactically. Both of these options are considered essential for maximum operational flexibility. The Boeing 747 does not have several of the critical advantages listed above.

For these reasons, the RDJTF fully supports the recommendation to procure 50 additional C-5 aircraft. In the near term, the C-5 will provide better flexibility to task organize early deploying forces to meet a variety of threats and permit us to insert those forces using a greater number of airfields throughout the operational area. The RDJTF needs the unique capabilities of the C-5 for a balanced airlift capability.

Mr. CARLUCCI. He reiterates the RDJTF fully supports the C-5.

Mr. ADDABBO. That statement will be placed in the record.

[The information follows:]

1. Recent Senate budget decisions indicate the Department of Defense may have to accept the Boeing 747 in lieu of additional C-5's. Because of these decisions, the RDJTF is concerned and believes it necessary to reiterate our position on the need for additional C-5 aircraft. The C-5 is a proven combat airlifter that is preferable for the following reasons: superior outsized cargo capability; C-5 has roll on/roll off self contained capability; compatibility with current Air Force material handling equipment; inflight refueling capability; ability to operate from austere airfields because of lower ground pressure generated from its numerous wheels; spare parts, tools and publications are in stock; existing training program; experienced crews on active duty; and exploitation of known maximum life expectancy established following the wing modification. The C-5 is the only aircraft capable of lifting certain outsize cargo (particularly tanks), strategically or tactically. Both of these options are considered essential for maximum operational flexibility. The Boeing 747 does not have several of the critical advantages listed above.

2. For these reasons, the RDJTF fully supports the recommendation to procure 50 additional C-5 aircraft. In the near term, the C-5 will provide better flexibility to task organize early deploying forces to meet a variety of threats and permit us to insert those forces using a greater number of airfields throughout the operational

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area. The RDJTF needs the unique capabilities of the C-5 for a balanced airlift capability.

SEALIFT VERSUS AIRLIFT FOR RDF

Mr. YOUNG. Your last question had to do with airlift versus sealift.

General Kelley responded earlier in the morning when he was asked about the time for the SL-7s to get from here to there. His response was 16 days.

General Kelley, when you estimated a 16-day voyage for the SL-7s, were you thinking about going through the Mediterranean or around the southern tip of Africa?

Admiral COWHILL. Either way it automatically takes 16 days to go 12,000 miles.

General KELLEY. Let me put one thing at rest. That is 16 days of transit time. If you and I started this minute and you said: Kelley, deploy—those SL-7s will have to get crews, will have to go on berth, will have to load, will have to go to a port at the other end to offload which may or may not be near the scene of combat, and we will then have a requirement for intra-theater movement of all of this equipment. That can be done by two ways: It certainly can be done by aircraft that have an outsized capability—because a lot of it will be outsize, particularly if we are moving within the 24th Mechanized Division.

The point to be made is, if we are comparing airlift and sealift percentages, it is sort of irrelevant because if you want to give up or abdicate roughly the first 25 to 30 days of any potential crisis to the other guy, then forget airlift.

Mr. DICKS. You have airlift. You have your C-5s already. You have 77 of them. You have the whole CRAF program.

General KELLEY. Which factually is incapable, sir—for the third time—is incapable of lifting the amount of outsized cargo that I, as the battlefield commander, need to perform the mission that is assigned to me.

Mr. YOUNG. The point is, sealift we are talking about is not a substitute for airlift especially in a rapid deployment scenario?

General KELLEY. Exactly.

Mr. YOUNG. Thank you.

Mr. ADDABBO. Mr. Secretary, Generals, thank you very much for your attendance.

Mr. DICKS. I have some questions for the record.

[CLERK'S NOTE. Questions submitted by Mr. Dicks and the answers thereto follow:]

C-17 AND AIR FORCE BRIEFING TO SECRETARY CARLUCCI

Question. Secretary Carlucci, I have a copy of an Air Force briefing paper reviewing mobility requirements and shortfalls and recommending an airlift program. I am advised this briefing was presented to you in January by Secretary Orr. Did the Air Force provide you a briefing in January on their recommendations for airlift?

Answer. Yes.

Question. In discussing the C-5 offer, the briefing slides note that it provides far less airlift than needed, does nothing for aging C-130s and C-141s, and that the C-5N is a 1960's design with the favorable price assuming few modifications. What is your response to each of these points?

Answer. The briefing is outdated. We conducted a subsequent review with the Air Force. The Air Force is fully supportive of the program we laid out. At that time, of course,. we were debating the issue of bringing an aircraft into the inventory on a longer time scale and for a broader range of requirements. In fact, many of those same views still apply as we address the question in the nineties of the aging C-130s and 141's. The thing that changed after January was a re-emphasis of the urgency of the need for intertheater strategic airlift. The Air Force looked at the acceleration of both the C-5 and the C-17 and concluded it was not practical to accelerate the C-17, but we could accelerate the C-5. Therefore, weighing again those factors, the Air Force concluded the C-5 was the preferable approach and made that decision and recommendation to the Secretary of Defense.

Question. Another slide in this briefing is entitled contractual arrangement comparison. It lists five major advantages for the C-17, such as firm fixed price incentive fee for full scale development and initial production lot, full cost and schedule visibility, fully warranted reliability and maintainability parameters at system level, fully warranted engine specifics including SFC decay rate, and that the contract is ready for execution. It lists only one disadvantage dealing with budgetary pricing for aircraft orders beyond the initial option.

For the C-5, it lists only one advantage, a firm fixed price for the first 50, while listing four disadvantages including limited cost and schedule visibility (Lockheed pricing presently based on none), tentative aircraft performance specifications less demanding than original C-5A specifications, no enforceable reliability or maintainablity warranties, and negotiations required to establish contract. Given the overwhelming weight of these arguments in favor of the C-17, why did you opt for the C-5?

Answer. As stated earlier, our decision was driven by the urgent need to increase our outsize, intertheater airlift capability in the near-term.

Question. The briefing also notes the vast difference in mission capable rates and maintenance rates between the C-5 and C-17. I will discuss these in more detail during my questions on the C-5's problems. But just briefly, why did you ignore Air Force data that showed the C-17 to be far more reliable and maintainable?

Answer. Technology has not stood still since the last C-5 was produced. Rather than ignore this important consideration, we examined carefully the improvements we believed were attainable in the reliability and maintainability of both aircraft. While the C-17 data did reflect higher performance in this area, the C-5 enhancements over the years showed impressive potential for improvements in performance measures such as maintenance man-hours per flying hour. Being a larger, heavier, older, and more complex aircraft, the C-5 will probably never surpass the maintenance record expected from the C-17.

Question. Under the heading long term, the Air Force memo states, "If programmed funds for airlift are available C-17 is by far the best answer, it adds intertheater and intratheater capability, airdrop lapes, austere airfield and combat offload advantages, has more versatility on all bases including main operating bases and provides an option to replace C-141s and some C-130s. Do you disagree with this Air Force assessment?

Answer. No, but please remember that programmed funds at that time were constrained to the fiscal year 1982-1986 levels for the C-X program. As stated earlier, the Air Force changed its recommendation when more funds were made available.

Question. The memo has a page entitled "The User's opinion". It quotes General Meyer, General Starry, General Gabriel, and General Kingston as all strongly supporting going with the C-17. Why did you reject their stated judgments?

Answer. You have to put those statements in their time perspective. We are talking about the C-17 as an aircraft for the 1990s, or the late 1980s. As General Allen indicated, it was not possible to accelerate the C-17. It would serve as a very good replacement, for example, for the C-141 or the C-130s. Every CINC that came in and testified before the defense resources board indicated that strategic airlift was his most compelling need, and I have in hand a cable here from General Kingston, whom you quoted, which fully supports the C-5 program.

What we need is additional outsized capability as early as we can possibly get it, and it is the C-5 program that can give us this capacity, and every one of the names you have read off there are fully supportive of the program that we have laid before the committee.

Question. The fiscal year 1982 President's amendment budget included plans to spend $7.5 billion on the C-17 between fiscal year 1982 and fiscal year 1986 according to a submission for the record from a March 9 hearing before this Committee. What is the present funding profile for that period for the C-17? Is it safe to say it will be far less than $7.5 billion?

Answer. The fiscal year 1982 President's Amended Budget contained funds for C-X not C-17. It was always OSD's intention that the winning new design be compared to existing aircraft before a final decision was made. We made such a comparison and concluded that the urgency of the need for additional outsize airlift justified procuring additional C-5s now while continuing C-17 R & D to provide the option of acquiring it in the future. In fact, our proposed funding for airlift enhancement exceeds the $7.5B figure cited. The present C-17 funding profile is under review. It is, at this time, far less than $7.5 billion for the period between fiscal year 1982-86.

Question. Then does the current plan delay introduction of the C-17 from this funding plan, and if so by how much?

Answer. The current plan envisions first delivery of the C-17 or some other advanced airlift aircraft in fiscal year 1989. This date is at least a year later than that estimated in the President's fiscal year 1982 budget amendment.

Question. Since the Air Force recommended the C-17 so highly, and you say you need airlift soon, why was C-17 funding drastically reduced?

Answer. Budget constraints forced us to choose between two very capable aircraft. Since the C-5 alternative offered the earliest relief from our current outsize airlift shortfall, we were compelled to slow development of the C-17.

Question. What is your current estimate of when the C-5 will reach IOC and FOC?

Answer. Because the C-5 is already in the operational inventory, the terms IOC and FOC are inappropriate. If contractual arrangements with Lockheed are completed in July 1982, the first C-5B would be delivered in December 1985 and the fiftieth in January 1989 according to the most current estimates.

Question. The Air Force estimated an IOC for the C-17 of 87 under their hoped for funding. How many planes would we have one year sooner with the C-5 program?

Answer. A fiscal year 1987 IOC for C-17 required funding in fiscal year 1982. At the time the decision was made to buy C-5Bs and postpone C-17 development, the Congress had specifically denied fiscal year 1982 funds for the C-17 (C-X), which meant that a fiscal year 1983 start was the earliest possible start for a C-17 full scale development program. The Air Force assessment of Congressional intent was that the $50 million appropriated in fiscal year 1982 for procurement of "wide-bodied cargo airlift aircraft" would allow a fiscal year 1982 start for the C-5B. This meant a 6 to 8 month earlier contract award for the C-5B vice C-17.

As part of the final review of the 1983 budget request, the Air Force was asked to examine alternatives for earlier delivery of airlift aircraft through increased funding. Because the C-5B program would start with an established production base (the wing modification and spares production are on-going efforts), the Air Force believed that it could be more readily accelerated than a program requiring significant RDT&E. Under the assumption that either program could be funded at the fastest prudent pace, the Air Force believed that 12 C-5Bs could be delivered up to 2 years earlier than 12 C-17s. On the delivery end of the projection program, the C-5Bs would be introduced directly into existing C-5A squadrons and would provide initial capability as soon as accepted. Conversely, the C-17 program called for a mini-squadron evaluation and operational test program which last over a year from the initial deliveries. During this time period, no worldwide support system would exist for C-17.

The combination of all relevent factors meant that the 2 year difference in raw delivery schedules must be added 18 to 24 months to make a realistic comparison. The resulting comparative schedules showed a 3-to-4 year difference in C-5B and C-17 operational availability and a 2-to-3 year difference in achieving full capability.

Question. Was McDonnell-Douglas asked to revise its proposals for the C-17 in light of increased funding for airlift? Why not? You didn't even want to have to look at such a proposal?

Answer. Having examined closely the proposals of all three bidders during the C-X competition, completed in August, 1981, we

felt we had sufficient data to assess what effect increased near-term funding would have on the C-17 production schedule.

Question. The Air Force briefing also includes a slide on their short term recommendations. They are for CRAF enhancement, KC-10, and B-747. You accepted the KC-10 portion, may eventually fund the CRAF enhancement, which I will discuss later, but rejected the 747 portion. What specific evaluation led you to reject this Air Force recommendation?

Answer. The Air Force briefing prepared in early January included no recommendation on the B-747 except for the role of that aircraft in the CRAF Enhancement program.

Question. As I understand your program at some point in the late 1980's or early 1990's we would have to decide whether we wanted to buy C-5s beyond the planned 50, or go with the C-17, is that correct?

Answer. No, that decision point would most likely occur in the mideighties.

Question. What is your honest assessment of the chances for the C-17 to win a competition against an operating line, that will be the only work going on at Lockheed at Marietta?

Answer. Competition between the C-5 and C-17 will exert healthy cost-control pressures on the manufacturers. The winning program will be the one that offers the greatest military benefits to the nation. The economic impact on the private sector is a secondary consideration.

Question. If as a result of budget reductions in the coming years some cuts have to be made in airlift, would you recommend cutting back on the C-5, or stretching again the C-17 effort?

Answer. We view airlift as of sufficient importance to national defense that we would vigorously oppose any alterations in the program the Department has proposed. If reductions in airlift funding for specific programs occur because of Congressional action, we would have to reassess the entire airlift package in the context of national security requirements.

Question. Finally, General Vessey in an April 16 response for the record to a question by Senator Jackson, states that the airlift enhancement decision does not meet eight critical areas that the C-17 would address. They are (1) intratheater outsized airlift, (2) outsized airdrop, (3) Low Altitude Parachute extraction, (4) routine operations from small austere airfields, (5) aerial maneuverability for support of tactical operations, (6) non-lethal defensive measures to increase survivability, (7) Marine Corps aerial tanker option, and (8) aerial command post option. For the record, respond to each of these factors to discuss why the airlift enhancement program does not meet them, and whether they would provide real military advantages. Again in light of all these factors, why did you decide to put the C-17 on the back burner?

Answer. The eight mission areas mentioned would definitely provide real military advantages. Although the C-5 would not be as capable for intratheater operations (#1) as the C-17, it certainly could be used that way if the urgency of a particular situation dictated it. Furthermore, non-lethal defensive measures (#6) could be added to the C-5 if this were thought to be desirable. The fact that C-5s and KC-10s do not provide features #2-5 is one of the factors

motivating the continuation of C-17 R&D. While the C-17 has been considered as a candidate for the last two mission areas, either the C-17, the C-5, or the KC-10 could also be used in these roles. The DOD airlift program procures C-5s now and slows C-17 development because of the urgency to reduce the near-term, outsize, intertheater airlift shortfall. Budget constraints will not permit us to acquire quickly all the military advantages we desire in the long term.

COST COMPARISONS C-5 VS. 747

Question. Clearly, the Congress faces difficult decisions in determining levels of defense spending for the coming years. We will have to make some major reductions below the previous plans. The Senate passed budget resolution calls for $22 billion in BA reductions for the Fiscal year 1983-85 period. The Latta substitute offered last month included $44.6 billion in cuts over the three years, and I understand it has not changed much in its new version. The Jones proposal would cut $92.2 billion. At the same time the total for 47 programs in the December 1981 Selected Acquisition Report was $454 billion, up $150 billion from the September report of three months before.

In any event, we aren't going to meet our budget goals simply by retiring ships early, cutting back a few brigades, or deactivating some squadrons. We are going to have to take a tough look at all the major, multibillion dollar programs.

It is particularly appropriate that we look at the C-5 decision in this light since DOD testimony states that the decision was based on a $3.7 billion increase in airlift funding over previous Reagan plans.

Secretary Carlucci, your statement notes that "there is no denying that used, commercial aircraft would cost less than C-5s." But DOD apparently feels the cost difference would be smaller than some have suggested. I would like to go through the differences in estimates to determine their validity, and how they were developed.

What is the cost difference between the Boeing proposal as submitted with a firm fixed price guarantee for both acquisition and contractor support, and the C-5 program over a 20 year life cycle?

Answer. The Boeing Company offered to replace 50 C-5Bs with 48 new B747s.

The acquisition cost for the two programs in constant Fiscal year 1981 dollars is $5.9B for the C-5B and $3.5B for the B747s. These estimates were accomplished by the Air Force and the OSD Cost Analysis Improvement Group on a rigorously comparable basis. They include funds for initial spares, peculiar support equipment, technical data, future engineering changes, and program management costs.

The portion of these funding requirements covered by the respective unsolicited proposals is $4.9B for the C-5B proposal and $3.0B for the B747 proposal. The ratio of contractor price to total acquisition cost is 83 percent for Lockheed and 86 percent for Boeing.

Boeing has proposed a contractor logistic support concept for the B747. The Air Force is not convinced this concept would be accept-

able for a world-wide committed airlift system. In addition, when making operating and support cost comparisons, it is important that candidate aircraft be charged for the same costs and tasks. For these reasons, the Air Force believes that a proper cost comparison should use the same support concept for both proposals.

The operating and support costs for the C-5B and B747 have been estimated by the Air Force and OSD CAIG. These estimates differ from Boeing in two key areas: (1) Boeing estimates the average peacetime fuel consumption to be 25 percent less than the Air Force estimate and (2) Boeing estimates lower spares and depot maintenance costs associated with a contractor logistic support concept rather than an organic support concept such as the one presently used on the MAC C-5, C-141, and C-130 force.

These O&S cost estimates are:

Fiscal Year 1981, dollars in billions

Boeing: 48/B747	$6.0
Air Force; 48/B747	8.5
Lockheed: 50/C-5B	7.3
Air Force: 50/C-5B	8.8

When these costs are added to the acquisition costs stated earlier, the life cycle cost estimates are:

Fiscal year 1981, dollars in billions

Boeing: 48/B747	$9.0
Air Force: 48/B747	12.1
Lockheed: 50/C-5B	12.2
Air Force: 50/C-5B	14.7

Therefore, the Air Force and OSD CAIG estimate of the life cycle cost differential between the B747 and the preferred best C-5B program is $2.6B (Fiscal year 1981 dollars) lower for the B747.

Finally, the Air Force does not agree that 48 is the number of B747's required to replace the 50 C-5's to be added to the USAF organic airlift force under the DOD airlift program. Even when using Boeing's assumptions (with which the Air Force does not fully agree) about the helicopter disassembly, acceptable loading clearances, and C-5 allowable cabin loads, the Air Force estimates that 55 B747's (48 PAA) are required to provide the same force closure capability as 50 C-5B's (44 PAA). Based on these numbers, the life cycle cost comparison becomes:

Fiscal year 1981, dollars in billions

Air Force:	
55/B747	$13.8
50/C-5	14.7

This estimate is $.9 billion lower for the B-747 rather than the nearly $6 billion differential claimed by Boeing. The far greater military capability and utility of the C-5B clearly justifies this additional cost.

Question. Would the acquisition cost of the 747 decrease if we bought used aircraft rather than new aircraft as included in the Mosemann letter, and if so by how much?

I'm puzzled about what economic benefit there is to the Government for buying the used 747s. If we pay $35 million each for them and then have to spend $15 to $20 million each to modify them, the

total cost will be about the same as the Boeing price for a brand new 747-200F ($58 million each).

I understand that the new aircraft would have the nose door while the modified used aircraft would not.

I would imagine that the used aircraft would be more costly to operate and maintain and do you think that the used 747's are the better buy?

Answer. Boeing has offered a fixed price for the modification, which does not include a nose cargo door. The modification cost would be additive to the used aircraft purchase price, which varies depending on the type and condition of the aircraft. In fiscal year 1982 dollars, the Air Force estimates the fly-away unit cost for a modified used B747 as $50.3 million and for a new B747 as $69.3 million. The Air Force estimates the full acquisition unit cost for a modified used B747 as $60.7 million and for a new B747 as $79.6 million (organic support) or $76.7 million (contractor logistics support). Substituting 57 used aircraft for 55 new B747s reduces life cycle costs by about half a billion dollars (fiscal year 1982 dollars). It would appear that new B747s would be the better buy since they would have their entire service life available for use. They would not be a mixed fleet from a logistic aspect and they would have the availability of the nose door which is not part of the used aircraft modification proposal.

Question. Mr. Mosemann's letter of May 7 indicates that DOD claims that acquisition costs for the 747 would be $500 million higher than guaranteed in the Boeing proposal. What are the reasons for this difference, how were they developed, and what specific studies of the Boeing proposal justify them?

Answer. The difference in acquisition cost results from Air Force estimates of spares, support equipment, data, and engineering change/management reserve funds required over and above what is included in the Boeing proposal. These estimates are based on Air Force experience with introducing systems into the inventory.

Question. DOD also claims the proper number of 747s for comparison purposes is 55 rather than 48, despite the fact that the chart from C-9 of the CMMS shows that the 747 is 20 percent more capable as an oversize and bulk carrier than the C-5. What is the specific justification for the use of 55 747s in your comparison and what specific analysis was done to come up with this figure?

Answer. Although Table C-9 of the CMMS shows the B-747F 20 percent more capable than the C-5 carrying oversize and bulk cargo, it does not show the whole story. The payloads in Table C-9 of the CMMS were determined by loading each type of aircraft with all the cargo it could carry out of a specific unit. Table C-9 must be considered in conjunction with Table C-10, which shows the percentge of that average payload which was outsize, oversize, or bulk cargo.

The specific analysis which determined the requirement for 55 B-747Fs started with the current airlift fleet. The DOD program of C-5Bs and KC-10s was added and this fleet was used to compute the closure time of those CMMS Scenario I forces with required delivery dates prior to the first possible sealift arrival. B-747Fs were then substituted for C-5Bs to determine the number which would provide the same closure time. However, in order to achieve equal

closure with B-747Fs, several normal Air Force study assumptions had to be relaxed. In other words, under normal Air Force assumptions concerning loading clearances, equipment disassembly, critical leg distances and aircraft availability, B-747Fs would never achieve the same closure as the C-5Bs. However, with the relaxed assumptions, the substitution of 48 PAA B-747Fs were found to provide a closure time equal to that of 44 PAA C-5Bs. These numbers represent total aircraft buys of 55 B-747Fs or 50 C-5Bs, respectively, including back-up aircraft inventory (BAI).

Question. The biggest factors in the cost differences involve operating and support costs. Boeing has included as part of its offer a guaranteed 20 year operating and support cost not to exceed $5.99 billion. The DOD insists on using Air Force personnel for support despite higher costs.

Does the Air Force use contractor support for its current C-9, KC-10 and E-4 fleets?

Has DOD done any specific analysis that led to rejection of the Boeing offer?

Answer. All depot level and most of the intermediate level maintenance for our C-9, KC-10, and E-4 fleets is accomplished by contract. Organizational level maintenance is accomplished by the Air Force.

It would be possible to logistically support Boeing 747Fs by contract in connection with the commercial 747 logistic infrastructure. The Air Force is not convinced that contractor logistics support would, over time, be less costly than organic Air Force support; certainly, the difference would not be large enough to be pivotal. Nor are we convinced that, even if somewhat less costly, such an arrangement would be desirable considering surge requirements and other military needs.

We satisfactorily maintain our C-9, T-43 and E-4 aircraft by contract, and, given the size of those respective fleets and their missions, we likely will continue to do so. It's also true that we presently maintain our small KC-10 force by contract. But in view of the decision to increase substantially the number of KC-10s and in consideration of their sustained wartime mission requirements, we will re-examine this arrangement prior to the expiration of our current contract.

Question. Does the Air Force see this type of support as producing cost savings on the KC-10?

Answer. Yes, particularly in the early years of KC-10 operation. However, we will need to reevaluate the KC-10 maintenance concept as the force size grows and as we receive follow-on bids for contractor support.

Question. Major Willey on May 24 testified that the initial study on contract logistics support versus organic support the KC-10 shows savings on the order of 50 percent going contractor logistics support with the known DC-10 worldwide fleet versus organic use.

Isn't there also a worldwide fleet and support system for 747s?

Answer. Yes, Boeing operates a worldwide support system which provides B747 spares and intermdediate level maintenance for commerical customers. However, we are not assured that KC-10 maintenance will be as cost favorable outside the original competitive environment. Further, there is no indication that savings on the

order of 50 percent would be realized by contractor's maintenance of B747s.

Question. If Boeing has guaranteed support costs, if it works so well for the KC-10, and no specific analysis has been done on the Boeing offer, what is the detailed rationale for its rejection and how was it developed?

Isn't fuel consumption part of the Boeing fixed price guarantee on support costs, and if so, doesn't this mean that the disagreement on figures is relevant only if DOD rejects contractor support?

Answer. Boeing has offered to guarantee as part of its proposal that 20 year operating and support (O&S) costs for 41 new PAA B747 freighters will not exceed $5.994 billion (fiscal year 1981 dollars). Boeing has not made a similar offer for used aircraft. The assumptions upon which this offer is based are:

(1) 20 maintenance manhours per flight hour for organizational maintenance,

(2) $900 (fiscal year 1981 dollars) per flight hour for contractor-furnished depot level maintenance, and

(3) an average of 2,865 gallons per hour of fuel burn on representative flight missions at a fuel cost of $1.16 per gallon (subject to adjustment depending on actual cost of fuel).

Boeing has not stated what the remedy would be if O&S costs should exceed this level. Boeing has not identified what work would be accomplished as contractor furnished depot level maintenance. Boeing has stated they will demonstrate the fuel burn levels upon which the 2,865 gallons per hour number is based at each aircraft delivery. The Air Force does not doubt that Boeing can demonstrate this number for their selected mission profiles. We estimate, however, that fuel costs will be greater than projected by Boeing.

There are obviously a great many elements of O&S costs about whihc Boeing has not stated their assumptions. Examples include manpower and training costs. Also, there are numerous elements of O&S costs over which neither Boeing nor the Air Force has direct control. Consequently, the Air Force believes it would be an intractable problem to negotiate a meaningful, contractually binding guarantee on 20 year O&S costs.

Question. A major part of the difference of opinion on operating costs involves fuel consumption for the 747.

Does MAC routinely fly airlifters with full loads at all times both to and from deployment destinations?

Answer. No. MAC does not routinely fly with full loads; however, the calculations used to estimate the fuel consumption for the C-5B and the B747 were not based on fully load aircraft. They were based on commercial experience and historical data. In any case, the C-5 and B747 assumptions used by the Air Force were the same in order to make a valid comparison.

Question. What is the average loading for the C-5, C-141 and C-130 in MAC use, and how does that compare to their maximum payloads?

Answer. Allowable Cabin Load (ACL), cargo weight, varies by type unit being transported and by the mix of units going to a specific theater. The following representative data, extracted from

AFR 76-2, takes into account aircraft performance data and theater requirements.

WARTIME PAYLOAD BY THEATER/TYPE CARGO

[Short tons]

	Bulk	Oversize	Outsize	Maximum: unrefueled/refueled
C-5:				
NATO	82.8	66.1	60.7	91.2/102.5
PACOM	71.3	62.4	60.7	77.6/102.5
C-141B:				
NATO	29.9	22.3	0	35.7/45.0
PACOM	27.6	21.3	0	29.8/45.0

UNIT AVERAGE PAYLOAD

[Short tons]

	Armor	Mechanized	Infantry	Airborn	Airmobile
C-5:					
NATO	72.6	69.5	63.2	53.8	48.0
PACOM	72.0	71.3	64.7	54.5	48.4
C-141:					
NATO	25.4	25.6	19.9	16.7	16.1
PACOM	23.7	23.9	19.4	16.5	16.1

While C-5's and C-141's are planned for 100 percent utilization of either ACL or CUBE (volume), C-130 utilization varies significantly by type mission and scenario. When used to complete unit closures during initial deployment, the payloads will be a high percentage of ACL. When used in response to a tactical situation calling for rapid response, the payload may be a very small percentage of ACL.

C-130 ACL's (short tons)

C-130A	26,000
C-130B	30,000
C-130E	35,000
C-130H	35,500

Question. I am told that DOD developed its fuel consumption numbers by averaging the fuel consumption of the E-4, which has a considerable amount of electronic equipment, and with fuel consumption figures from three commercial 747 cargo carriers carrrying full 90 ton loads both ways.

How was this formula for computing 747 fuel consumption developed?

Why was the E-4 used and not just commercial aircraft?

Why was full loading on all flights used when this is not typical MAC usage?

Answer. The Air Force estimate for the 747 fuel consumption was based on an analysis of peacetime fuel consumption for large Air Force aircraft. The estimated 747 rate of 3,893 gallons per flight hour was compared to the E-4 aircraft consumption experience of 4,186 gallons per flight hour. The estimated rate was also

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compared to commercial cargo carrier fuel rates. Commercial airline experience with the 747 as reported by Aviation Week and Space Technology, May 31, 1982 is as follows:

Fuel Rate

Flying Tiger	3,846
Pan Am	3,610
TWA	3,609
NW	3,676
American	3,747

The commercial carrier loads averaged 50–70 percent of capacity. Full loading on all flights was not used in the Air Force estimate.

C–5 PROBLEMS—COST FACTORS

Question. What was the original cost estimate for the C–5A program of 120 aircraft, both in terms of total program cost and unit cost?

What was the cost estimate for the C–5A program when it was reduced from 120 to 81 aircraft, again both in terms of total program and unit cost?

What is the final cost of the program in these same terms after rewinging is completed?

What would be the unit cost of the C–5A program as translated into fiscal year 1982 dollars?

Answer. Air Force estimate at the start of the C–5A program for RDT&E plus 120 aircraft was:

Total Cost: $3,413 million (mid-late 1960's TY $).

Unit Cost: $28.4 million (mid-late 1960's TY $).

The cost estimate for RDT&E plus 81 aircraft C–5A program in the Dec 1969 SAR, when the decision was made to reduce program to 81 aircraft, was:

Total Cost: $4,310 million (late 1960's-early 1970's TY $).

Unit Cost: $53.2 million (late 1960's-early 1970's TY $).

The final cost for RDT&E plus an 81 aircraft C–5A program was:

Total Cost: $4,445 million (late 1960's-early 1970's TY $).

Unit Cost: $54.9 million (late 1960's-early 1970's TY $).

The total cost for 81 C–5A plus the wing mod program in then year dollars is projected to be:

Total Cost: $5,933 million.

Unit Cost: $73.2 million.

The cost of the C–5A program including the wing mod in fiscal year 1982 dollars is:

Total Cost: $11,625 million.

Unit Cost: $143.5 million.

Question. What is the assumed unit cost in the Lockheed proposal?

Answer. Lockheed offered 50 C–5B aircraft for $4.9 billion in fiscal year 1981 dollars, a unit cost of $98 million. However, Air Force estimates of spares, support equipment, data, and engineering change/management reserve funds increase the unit acquisition cost to $118 million.

Question. DOD has testified that 240 changes have been incorporated into the C–5B, is that correct?

How did these factor into cost estimates?

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Answer. The 240 changes represent engineering improvements that have been made to the C-5 since the 81st aircraft was manufactured. These changes (and in fact, all Air Force approved engineering change proposals) are included in the Lockheed fixed price offer.

Question. Has DOD done a detailed audit of the cost estimates in the Lockheed proposal? If so, please provide it for the Committees.

Answer. The Air Force Aeronautical Systems Division initiated an audit of the Lockheed unsolicited proposal in February 1982. A limited audit has been received due to the lack of current and complete vendor proposals. It is anticipated that the full audit will be completed and forwarded for Air Force analysis in August.

Question. Given all these factors and the history of the C-5A program, how can the Department be confident that Lockheed can meet its stated costs?

Answer. The proposed costs contained in the Lockheed C-5B proposal were carefully analyzed by the Air Force using actual C-5/C-141 cost history and accepted parametric cost estimating techniques. These analyses indicate that Lockheed should be able to execute, for the offered price, that portion of the C-5B acquisition program contained in their proposal.

Question. What justification can you provide to support your faith in the Lockheed estimates and rejection out of hand of the Boeing costs?

Answer. Neither proposal was accepted at face value. Air Force estimates of the other goverment costs necessary to implement an acquisition program indicate that costs for both programs are greater than estimated by the contractors. As a percentage of the total acquisition program, the Air Force increase over and above the Lockheed estimate is greater than the Air Force increase over the Boeing estimate.

Question. What will happen if the Lockheed cost estimates are not met, has the company pledged to absorb whatever extra costs they incur without any caveats? If so, could they attempt to recover such losses in possible follow on contracts if we ultimately decided to buy more than 50 C-5s?

Answer. The Lockheed offer is a fixed price plus escalation offer on 50 C-5Bs, and any difference between the price plus escalation and the actual cost would have to be borne by Lockeed. The price of any C-5Bs beyond 50 would be based on the cost record of the present production program, and the Air Force will have cost visibility as part of the present C-5 contract offer.

C-5 PROBLEMS—PRODUCIBILITY

Question. How long has the C-5 production line been closed for building new aircraft?

Answer. The last C-5A was delivered in 1973.

Question. Has the Air Force any recent experience in reviving a major program production line that had been closed this long?

Answer. In 1979 the Air Force contracted to have Lockheed reopen the U-2R/TR-1 production line after a closure of ten years. Because of the very small quantity produced in 1968-69, emphasis

was not placed on production efforts or procurement of detailed reprocurement data.

The line was reopened without technical problems; however, due to the limited procurement/production data available from the 1968-69 production, it was difficult for the contractor and the government to accurately estimate costs on the initial lot of the new production run.

While there was limited production data to support the reopened production line, the U-2R/TR-1 airframe had been flown for ten years without problems or modifications. These conditions may not exist in other programs; therefore, caution should be used in drawing parallels between the U-2R/TR-1 experience and other major aircraft production programs.

Question. According to a response for the record from the May 4 hearing of Senate Armed Services, the Department testified that no evaluation of Lockheed's ability to produce its proposed C-5 derivative has been performed. Specifically, the response states, "During the C-X source selection, a Manufacturing/Production Capability review was conducted at Lockheed Georgia to evaluate the company's capability to produce its C-X candidate aircraft. During that time period, a second review had been scheduled to evaluate the company's capability to produce its proposed C-5 Derivative. However, that review was not conducted. Why hasn't DOD done such a review, and without it, on what specific evidence do you base your acceptance of Lockheed's ability to produce the C-5 as claimed?

Does the Department routinely accept unsolicited proposals and base program decisions on them without performing this evaluation?

OSD answer. The Department's policy regarding the evaluation of unsolicited proposals is stated, in part, as follows in the Defense Regulation (DAR). Factors to be evaluated include:

> * * * capabilities, related experience, facilities or techniques, or unique combinations thereof which the offeror possesses and offers, and which are considered to be integral factors for achieving the scientific, technical, or socio-economic objective(s) of the proposal; and qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel who are considered to be critical in achieving the objectives of the proposal.

The extent of the evaluation of an individual proposal may vary, depending upon the content of the proposal and the government's knowledge of the contractor's organization derived from prior relevant contracts and government personnel in the plant (such as Defense Contract Administration Agency offices, Service Plant Representative offices, and Defense Contract Audit Agency residencies).

Air Force answer. No, the Department does not normally accept unsolicited proposals without an evaluation of the offeror's ability to produce. However, we have great confidence in Lockheed's ability to produce the C-5B. We feel this confidence is justified by Lockheed's performance on the C-141 stretch and C-5A wing modification programs and by our Manufacturing Management/Production Capability Review (MM/PCR) completed for the Lockheed new design proposal submitted for the C-X competition. Further, virtually all C-5 line replaceable units are in production due to our ongoing efforts to upgrade our airlift spares inventories.

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To date, results of the Lockheed C-X MM/PCR have proven sufficiently broad in the areas of manpower and facilities to indicate that the C-5B requirements can be met. Continuing informal precontract discussions with Lockheed and major vendors such as General Electric and AVCO have allowed us to conclude that C-5B tooling is not a major concern.

C-5 PROBLEMS—PERFORMANCE

Question. We have discussed this before but just to remind the members, what is unrefueled range of the C-5 and the 747, and what are their cargo capacities and their speed?

Answer. The maximum range (unrefueled), carrying 90,000 lbs of cargo using wartime "G" limits and 8,000 ft critical field length is 4,200 miles for the C-5 and 5,500 miles for the 747-200F. The cargo capacities (maximum allowable cabin load) are: 242,500 lbs for the C-5 and 243,000 lbs for the 747-200F. The C-5 has an average cruise speed of 450 kns and that of the 747 is 490 kns.

Question. What was the original service life forecast for the C-5A and to what was it reduced when the wing problems were identified?

Answer. The original C-5A service life goal was 30,000 hours. The wing problem has reduced C-5A service life to approximately 8,000 actual flying hours; however, the wing modification will extend the C-5A service life by an additional 30,000 flight hours.

Question. Has a surge test of C-5s to the 12.5 hour a day utilization goal ever been conducted?

Answer. No surge test has been conducted with the C-5A due to the need to husband the wing life pending completion of the wing mod program. When the wing mod is complete and the programs to increase spares levels and obtain full crew manning are complete, the Air Force will seriously consider a system surge test for the C-5A. In every instance when real surge requirements have been imposed, such as the 1973 Arab-Israeli War, the C-5A has responded with utilization rate consistent with our 12.5 hour per day utilization objective.

Question. In a March 1980 letter to General Russ, then Secretary of the Air Force Hans Mark noted that "additional C-5s would not reduce the dependency of our airlift force on major airfields. The C-5 tests on unprepared surfaces at Harper Dry Lake and on matting at Dyess AFB were terminated before completion because of runway and aircraft damage. Has DOD done any further field test since those referred to in Secretary Mark's letter on this issue.

Then your argument for the C-5 does not include a major claim that you will use it on unimproved runways, correct?

Answer. During July-August 1980, January 1981, and July 1981, the Air Force Test and Evaluation center and the Military Airlift Command (MAC) conducted a series of tests to evaluate C-5A ground operations on unprepared, semi-prepared and fully prepared airfield surfaces.

The results of the evaluation confirmed that the C-5A has good capability off pavement within the criteria for which the aircraft was designed. However, because soil strength for a given area of the world cannot be predicted accurately, this capability would be

employed only as an emergency measure during the execution phase of contingency/wartime operations to help insure the planned airlift is successfully accomplished despite unforseen adverse circumstances or enemy action.

Question. What was the mission capable rate for the C-5 during fiscal year 1981?

Answer. The mission capable rate for the C-5 during fiscal year 1981 was 53.0 percent. This is not, however, an accurate measure of an airlift's ability to successfully pursue its mission. The mission reliability rate for C-5 for 1981 was 89.0 percent. The mission reliability rate during the Yom Kippur War was 96.4 percent.

Question. What is the estimate of the mission capable rate for the C-5 derivative you are proposing?

Answer. Based on reliability and maintainability improvements for individual aircraft components reaching the Lockheed predicted levels, the Air Force estimates the C-5B will have a full mission capable rate of 53.4 percent and a partial mission capable rate of 57.1 percent.

Question. What is the estimate of the mission capable rate for the C-17?

Answer. The Air Force estimates the C-17 will have a full mission capable rate of 74.7 percent and a partial mission capable rate of 82.5 percent.

Question. What is the mission capable rate in commercial experience for the 747?

Answer. Since they have no surge or contingency mission for which they must make continuous assessments, commercial airlines do not use a mission capable rate such as the Air Force uses. The 747 does have a mission reliability rate in excess of 90 percent. The C-5A mission reliability rate for fiscal year 1981 was 89 percent.

Question. What is the number of maintenance manhours per flying hour for the present C-5 fleet?

Answer. For fiscal year 1981 the C-5A fleet maintenance manhours per flying hour was 69.9.

Question. What does the Air Force estimate as this rate for the C-5 derivative?

What specific actions justify this dramatic expectation in reduced maintenance?

Answer. The Air Force estimates that the C-5B will require approximately 50 maintenance manhours per flight hour. Predicted reductions in maintenance manhours over current C-5A experience are based on a combination of the following actions:

a. Reduction in corrective maintenance actions by changing to more reliable components.

b. Reduction in maintenance actions by reducing system complexity. This includes reducing the number of hardware components through redesign and elimination of some unneeded subsystems.

c. Reduction in maintenance time for trouble shooting and repair of components through use of improved maintenance manuals.

d. Reduction in general support maintenance through improved corrosion control and less [illegible]eral shop support requirements.

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e. Reduction in inspection time by reducing inspection requirements and improving inspection procedures.

Question. What is the Air Force estimate for the C-17?

Answer. The Air Force estimate for C-17 direct maintenance manhours per flight hour is 18.

Question. The 747?

Answer. B747 direct maintenance manhours per flight hour are estimated at 40, with 15 representing organizational level maintenance.

AIRLIFT REQUIREMENTS

Question. I think it's good that you open your statement Secretary Carlucci with a discussion of our overall lift requirements, and the necessity of a mix of sealift, airlift, and prepositioning.

General Kingston testified very recently before this Committee that between 90 and 94 percent of all the tonnage to be moved for the RDF would either go by sealift or be prepositioned. He stated that between 6-10 percent would be airlifted.

Of that 6-10 percent, 15 percent is outsized cargo, so of the total tonnage for the RDF, about two-thirds of 1 percent to 1.5 percent would be outsized airlifted tonnage. Do you plan to routinely move tanks by airlift?

Answer. No, but we do plan to move other equally important outsized items by air. Furthermore, the division of effort among mobility modes over the entire course of a deployment is not relevant to the need for airlift. To deter or defend successfully we must be able to deliver forces quickly. In the first few weeks almost all forces will be delivered by air, either in their entirety or to prepositioned equipment.

Question. I have a chart I would like to submit for the record showing the total daily requirement for an RDF deployment oversize, outsize and bulk cargo for the first 18 days of a deployment. It shows that by far most of the equipment that must be moved is not outsized. I would appreciate your evaluation of it for the record.

Answer. The chart you displayed was used in Boeing's analysis of CMMS Scenario I, in which a light force moved to Southwest Asia. The bulk cargo figure shown includes about 20,000 tons that DOD now plans to preposition based on the CMMS recommendations.

We agree that a small percentage by weight of cargo is outsize in the early days of all the CMMS scenarios. We disagree with the conclusion some people have drawn from this that we can, therefore, add only oversize/bulk capacity to our airlift force as the Boeing proposal would do. When we evaluate the Boeing proposal in the CMMS scenarios we find that the airlift force is severely "outsize constrained". That is, a high percentage of outsized cargo is delivered one or more days after the completion of delivery of the oversize/bulk cargo of the same unit (as much as 90 percent in some scenarios).

[CLERK'S NOTE: Referenced chart is printed on page 47.]

Question. What are total DOD spending plans for each of the three elements of lift, sea, air, and prepositioning? Isn't it a pretty safe statement that even though airlift provides only a very small

fraction of total tonnage moved, we are spending far more on it than either sealift or prepositioning.

Answer. The Defense Program includes funds for additional airlift, maritime and land-based prepositioning and some increase to sealift. Over the fiscal year 1983–87 time period we expect to spend about $19 billion. Of this, about 68 percent is for additional airlift, 13 percent for additional sealift, and 19 percent for prepositioning. As you can see, the majority of the funds in this time period are being spent for airlift. Compared to sealift, airlift will move a relatively small percentage of total weight in both military and commercial applications. Although it is the most expensive mode of transportation, it offers speed and flexibility that is not available with any other mode. Airlift is also required to make prepositioning effective since personnel and residual equipment must be delivered to prepositioned sets of equipment to make them effective.

Question. When General Kingston appeared before us, he noted that the 13 prepositioning ships he is scheduled to get will equal in delivery capability 100 C–141 sorties per day for 28 days. What is the cost comparison between 100 C–141s and 13 prepositioning ships?

Answer. We will spend approximately $225 million per year, in 1983 dollars, to charter the ships and to maintain the equipment and supplies on board them. There is no current cost estimate available for C–141s. However, let me point out that prepositioning will nearly always be much less costly than airlift. On the other hand, airlift can deliver cargo at or near the point of use while cargo on prepositioning ships must be offloaded (often in austere ports or over the beach) and moved forward (often a significant distance over poor roads). Consequently, prepositioning cannot always provide a sufficiently rapid response. Also, many pieces of military equipment are not suitable for prepositioning, for a variety of reasons, so that prepositioning of unit equipment is ineffective without airlift. We are strong supporters of prepositioning and have proposed a very extensive program. Nevertheless, we do not believe we will ever be able to preposition sufficient quantities of materiel in the right places to eliminate the need for additional airlift.

Question. Lockheed has included a penalty offer, now raised to $25 million if the maintenance manhours ratio exceeds 40, still twice that of other aircraft. However, $25 million is a very small part of a total $9 billion acquisition program. What additional penalties would there be to Lockheed if the 40 goal is not met?

Answer. There is no direct additional penalty if the 40 manhour goal is not met; however, Lockheed has offered standard DOD warranties on materials and workmanship which cover those defects for which notice is given within one year from delivery. For the following four year period, Lockheed has offered a warranty similar to that extended to commercial aircraft customers. This commercial type of warranty will provide for repair, rework, replacement, or correction of items designed by Lockheed and if defective when delivered: (1) in materials or workmanship, when notice of the defect is received within the five years after delivery; and (2) as to design and specification conformance, 18 months after delivery.

The C–5A has developed into a very fine and effective military airlifter with unique capabilities. Its operating characteristics and

service life projections are well known to the Air Force. The Air Force is confident that the C-5B will meet our operating performance expectations and that the cost of futher guarantees or warranties does not represent a worthwhile investment.

Question. What would be the 20 year O&S costs for the C-5 program if the Air Force estimate of 49.5 hours occurs, and the cost if the current 75.6 hour rate occurs?

Answer. The 20 year O&S estimates are the same: $8.8 billion (fiscal year 1981 dollars). This is because peacetime maintenance manhour per flight hour (MMH/FH) rates are not used to estimate life cycle cost (LCC). Instead, LCC estimates for strategic airlift systems are based on the manpower levels necessary to maintain wartime aircraft utilization rates. After completion of the C-5A wing modification and our efforts to increase airlift spares inventories, we expect to have nearly the same reliability and maintainability for both the C-5A and C-5B. Consequently, the same manpower level would be required for either aircraft to maintain wartime utilization rates.

Currently, C-5As are flying very low peacetime utilization rates in order to conserve wing life pending completion of the wing modification. Many major maintenance tasks are now accomplished on the basis of elasped time rather than flying time. This results in a higher MMH/FH rate. As we increase the utilization rate of the C-5A, we will produce an immediate reduction in MMH/FH.

Question. Page 21 of the CMMS states "baseline oversize and bulk capacity could be substantially increased without adding any outsize capability. Achieving added capability by purchasing existing commercial freighters could be economical even considering the additional capacity needed to make up for the lack of austere field capability." Does the baseline referred to in this statement include an assumption of 32 747 CRAF enhancement aircraft which never materialized?

Answer. Yes.

Question. Doesn't this add to the real shortfall for oversize capability since the baseline force will not in fact exist without purchase of commercial aircraft?

Answer. Not necessarily. The proper outsize/oversize airlift mix is very scenario-dependent. Units deploying early may or may not have large outsize fractions. You have quoted, out of context, a statement from page 26 of the CMMS Executive Summary. Allow me to quote from the material immediately following: "On the other hand, there are diminished benefits to adding additional oversize capability without providing adequate balance with outsize capability. In addition, such an option would provide nothing for intratheater airlift and would provide no flexibility to handle a large outsize fraction in other scenarios which may be of interest in the future."

CRAF 747'S

Question. How many 747s are currently in CRAF, actual 747s and not 747 equivalents?

Answer. As of June 1, 1982 Stage III of the CRAF contained 110 747 passenger aircraft and 36 747 cargo-capable aircraft. In addi-

tion, Stage III contains 76 DC-10 passenger aircraft, 22 L-1011 passenger aircraft, and 16 DC-10 cargo aircraft.

Question. How many of these are among those identified as surplus to the airlines?

Answer. The Boeing company has identified six US-operated 747s as "available", but since airlines do not necessarily commit all of their airframes to the CRAF, those six may or may not be committed. For competitive reasons, the airlines do not circulate their characterizations of surplus aircraft widely outside of the airline industry. Therefore, if market conditions are creating a surplus of wide-bodied aircraft, DOD cannot be certain which aircraft are so labeled.

Question. Mr. Carlucci, you stated the "82 CRAF enhancement program was less than successful." How many 747s and DC-10/30s were offered?

Answer. The initial solicitation attracted 89 DC-10s and 36 747s. Because not all aircraft met the RFP criteria and cost data could not be determined for the 747s, only 53 DC-10s remained as viable candidates at the end of the solicitation process.

Question. Have you in hand any written offers from airlines for CRAF enhancement with 747s or DC-10/30s?

Answer. No. All previous offers have expired.

Question. Have any of the airlines advised the Department that they may have to sell surplus aircraft now in CRAF abroad unless DOD arranges to purchase or lease them?

Answer. CINCMAC has begun a new round of discussions with the airlines regarding CRAF Enhancement and he will, no doubt, address this issue. Because of the sensitivity of these discussions and because they are incomplete, we are reluctant to comment at this point on airline proposals. We would naturally be concerned about any potential losses to the CRAF. Therefore, we are exploring a number of different approaches to preserve civilian aircraft for DOD emergency use.

Question. Does Air Force dispute the fact that there are approximately 40 surplus 747s now on the market?

Answer. No.

Question. Are any domestic carriers presently buying 747s?

Answer. No. There have been no new domestic orders since 1979.

Question. Since the '82 program failed, there are surplus 747 on the market, and no domestic carriers are buying them, what firm evidence do you have that CRAF enhancement will work any better now?

Answer. The 1982 CRAF Enhancement legislation contained new language favorable to a low-risk, stable program. US airlines have just reported one of the worst years in history. We feel the timing is right and opportunity exists to broaden the civil-military airlift partnership in a very creative way, with extremely low costs. Since there is no known, cheaper method of increasing airlift capacity, we will not abandon this important program unless its failure is certain.

[CLERK'S NOTE: End of questions submitted by Mr. Dicks.]

Mr. GINN. Mr. Chairman, I also have some questions I would like answered for the record.

[CLERK'S NOTE: Questions submitted by Mr. Ginn and the answers thereto follow:]

ITEMS CARRIED ON C-5 OR 747'S

Question. What are some of the items that can be carried on a C-5 that cannot be carried on a 747? Please submit the entire list for the record?

Answer. The most important items which the C-5 can carry but the 747 cannot are the larger pieces of air defense, firepower, and mobility equipment so vital in the early stages of any major conflict. Examples of these are the Division Air Defense (DIVAD) Gun, the Platoon Command Post for the I-Hawk Guided Missile, the 8-inch and 155-millimeter Howitzers, and the Blackhawk and Chinook helicopters. The table below provides C-5 and 747 loadability information for Army equipment by general or generic vehicle types. Attachment 1 contains a detailed listing of items that can be carried by the C-5, but cannot be carried on a 747.

LOADABILITY OF SOME SIGNIFICANT ARMY EQUIPMENT ON THE C-5A/B AND THE BOEING 747F

a. Loadable on C-5A/B but not on the B-747F:

Tracked Vehicles
M1/M60 combat tanks
Combat engineer vehicle
Tracked bridge launchers
Tracked recovery vehicles
8-in self propelled howitzer M110
155-mm self propelled howitzer M109
MLRS launcher loader
DIVAD gun

Helicopters
CH-47 cargo helicopter (Disassembled)
UH-60 utility helicopter

Wheeled Vehicles
Semitrailer mounted
Electronics shops
Repair Parts vans
Supply vans
Shop vans
Topographic vans
Semitrailer low bed 60-ton M747
Semitrailer flat bed M872
5,000 gallon tank semitrailers
Pershing GM battery Control Central
I-Hawk GM platoon CP
MLRS cargo truck M985WWN
8-ton cargo truck M877
8-ton cargo truck M520WWN
2500 gallon tank trucks
Van truck 5-ton
Van truck 2½-ton
Truck-tractor 22½-ton M746
Truck-tractor M911
Truck-tractor M916
Truck-tractor M920
Truck-tractor-wrecker M819WWN
Truck-wrecker 5-ton M816WWN
Truck-wrecker 10-ton M553WWN

b. Loadable on B-747F only after major reduction and with special procedures:

Tracked Vehicles
Cavalry fighting vehicle
Infantry fighting vehicle
Tractor full-tracked M9

Helicopters
Advanced scout helicopter
OH-58 series observation helicopters
UH-1 series utility helicopters
AH-64 attack helicopter
AH-1 series attack helicopters

Wheeled Vehicles
Truck bolster 5-ton
Truck telephone maintenance
Truck-tractor 10-ton
Truck-tractor M915

NOTES

a. Major reduction occurs, or is required, when maintenance capability beyond that of the owning unit is needed for disassembly or reassembly of an item in qualifying it for transport by a particular airlift aircraft.

b. Special procedures must be developed when safety or other considerations prevent loading an item on an aircraft in accordance with the general procedures given in Section IV of that aircraft's loading manual (the dash 9). These special procedures result from engineering analyses or test loadings and are published in Section VI of the dash 9.

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c. Before loading, pallets must be placed over the B-747F floor o: items of equipment must be individually palletized. This requirement results from a basic design difference between military and commercial cargo aircraft. The floor surface of the military plane is designed for direct contact of the loaded equipment, whereas commercially all cargo is either placed on pallets or in specially designed containers having a "pallet" bottom. Thus, the commercial aircraft's roller system and not its floor surface is designed for cargo support using pallets as an interface.

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ARMY EQUIPMENT THAT CAN BE CARRIED BY THE C-5 BUT NOT BY THE 747F

LIN	VEHICLE
A26868	AIR DEFENSE SYSTEM GM - TN/TSQ-73BN
A26874	AIR DEFENSE SYSTEM GM - AN/TSQ-73GP
A30221	AIRPLANE OBSN STOL - OV-1B
A30271	AIRPLANE OBSN STOL - OV-1C
A30296	AIRPLANE OBSN STOL - OV-1D
A30444	AIRPLANE RECON STOL - RV-1D
A30591	AIRPLANE RECON UTIL - RU-21H
A30694	AIRPLANE RECON UTIL - RU-21A
A30762	AIRPLANE RECON UTIL - RU-21B
A30843	AIRPLANE RECON UTIL - RU-21C
A30946	AIRPLANE UTILITY - U-21A
A80534	ANTENNA RCVR XMTR GP - AN/MPA-53
A80548	ANTENNA RCVR XMTR GP - AN/MPA-55
A81439	ANT RCVR XMTR TLR MTD - OA-1340/MPA
B84130	BOAT PICKET 36-47F - BOAT 4003
C82583	CAMERA SEC TRK MTD - TOPO SET
D02454	DETECTING SYS SP PRP - AN/TSQ-114
D14593	CARTOG SEC TRK MTD - TOPO SET
D28318	DIST WTR TK STLR MTD - WD6S
D79318	CENT OFC TEL STLR MTD - AN/MTC-9
E02092	ELCT SHOP SET STLRMTD - AN/ALM-153
E56578	CBT ENG VEH FTRAC - M728
E59253	COMMUNICATIONS CENT - AN/MGC-38A
E60194	COMM CON CTR STLR MTD - AN/MSQ-73
F00355	CONV UNIT STLR MTD - FE34365
F12438	COOL TOWER STLR MTD - 240 GPM
F13075	COPY SUPPLY TRKMTD - TOPO SET
F39378	CRANE WHL 20T W/BOOM - 2385
F40474	CRANE CWL MTD W/BOOM - M855BG240T
F43067	CRANE WHEEL MTD 5 TON - H-446A
F43364	CRANE CWL 12.5T W/BOOM - 36M
F43414	CRANE TRK 20T W/BOOM - M320T
F43429	CRANE TRK MTD HYD 25T - MT-250A
F49399	CRUSH & SCREEN PLANT - 75 TPH
F49536	CRUSH & SCREEN PLANT - 2A
F77651	DATA ANALYSIS CENTRAL - OL-88/MYK-8
F77918	DATA STORAGE GROUP - OL-89/MYK-8V
F77964	DATA SUPPORT FAC MBL - V460/MYK-8V
G13947	DIR STA GM TLR MTD - AN/MSQ-101
G27844	DISTR BITUM TRK MTD - D60
G28212	DISTR WTR TK TRK MTD - W15A61A2
G29945	DITCH MACH WHL MTD - 750
G58613	DRILL MACH WELL ROT - 1500 FT
H01855	ELCT SHOP STLRMTD L/P - AN/ASM-189A
H01857	ELCT SHOP STLR MTD - AN/ASM-190A
H01957	ELCT SHOP TLR MTD - M304A1 NH
H55275	FINISHING MACH CONC - SFQ
H76489	FLIGHT OP CENTRAL L/P - AN/MSC-53
J30766	GEN CHG PLT STLR MTD - TMCP-751

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LIN	VEHICLE
J30903	GEN CHG PLT STLR MTD - 131-4911
J35663	GEN SET DED TRK MTD - PU-700A/M
J35698	GEN SET DED TRK MTD - PU-408/M
J74852	GRADER ROAD MTZ DED - 12 WTRZ
J95384	GM BTRY CONTROL CEN - PERSHING
J96820	GUN AA ARTY SP 40MM - M42A1
J97230	GUN FA SP 175MM - M107
K27486	HEAT & TIEDOWN U TRKMTD - M78A1
K30449	HELICOPTER CARGO - CH-47C
K30515	HELICOPTER CARGO - CH-54A
K30516	HELICOPTER CARGO - CH-54B
K32293	HELICOPTER UTILITY - UH-60A
K56981	HOWITZER HVY SP 8 IN - M110A2
K57256	HOWITZER LT SP 105MM - M108
K57667	HOWITZER MED SP 155MM - M109A1
K82205	INFO & COORD CENTRAL GM - AN/MSQ-95
K90188	INST REP SHOP TRK MTD - M185A3
L33321	LAB SEC SET TRKMTD - TOPO SET
L33800	LAB PETRL STLR MTD - NONE
L43664	LCHR BRIDGE TANK MTD - M60CHASSIS
L45534	LCHR RKT 762MM TRKMTD - M386A1
L46445	LCHR CON GP GM TLRMTD - AN/MSW-4
L67234	LIGHTER AMPH SP - LARC-V
L67371	LIGHTER AMPH SP - LARC-XV
L76315	LOADER SCOOP TYPE WHL - 175B
L76321	LOADER SCOOP TYPE WHL - 175B
M07888	MAP LAYOUT TRKMTD - TOPO SET
M08025	MAP REV SEC TRKMTD - TOPO SET
M54151	MIXER CONC TLR MTD - 16-SA
M57481	MOBILE MAINT SHOP FAC - V-452/MYK-8
M83242	MUX SEC MAP TRKMTD - TOPO SET
M96554	MAINT FACL ELE EQUIP - AN/TSM-141
N19977	OPERATION CEN COMM - AN/MSC-25
N87460	PHOTO SET TRK MTD - TOPO SET
N87960	PHOTO SET TRK MTD - TOPO SET
P03804	PLATE PROC TRKMTD - TOPO SET
P05898	PLATOON CP GM IMPHAWK - AN/MSW-11
P27821	POWER PLANT STLR MTD - AN/MJQ-11
P46938	PSVTN & PKG STRL MTD - SET NO 1
P50041	PRESS SEC TRK MTD - TOPO SET
P61528	PRTG PLANT STLR MTD - SP WARFARE
Q13633	RADAR ANT DR TRK MTD - VADS
Q16030	RADAR SET STLR MTD - AN/MPQ-43
Q16040	RADAR SET TLR MTD - AN/MPQ-46
R50544	RECOVERY VEH FTRAC - M578
R50681	RECOVERY VEH FTRAC - M88A1
R52776	RECTIFIER RK MTD - TOPO SET
S10059	STLR TANK FUEL 5000 G - M967
S10127	STLR TANK FUEL 5000 G - M970
S40029	SAWMILL CIR STLR MTD - 60 IN BLADE

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LIN	VEHICLE
S56119	SCRAPER TOWED - MS100M64
S56256	SCRAPER TOWED - CT-4
S70027	STLR LOW BED 22 1/2 T - M871
S70159	SEMITRAILER FLAT BED - M872
S70661	STLR LOW BED 60 TON - M747 CHRY
S70791	STLR LOW BED 60 TON - M162
S70877	SEMITRAILER LOW BED - V-398/MSA
S70928	STLR MAINT WPN CONEC - M459
S71065	STLR MAINT WPN ELEC U - M458
S71202	STLR MAINT WPN MECH U - M457
S71613	STLR REEFER 7-1/2 TON - M349A4
S72188	STLR TANK FUEL SVC - M857
S72846	STLR TANK FUEL 5000 G - M131A5
S72983	STLR TANK FSVC 5000 G - M131A5C
S73372	STLR TK 5000 GAL AUTO - M969
S73531	STLR VAN CARGO 6 TON - M119A1
S73668	STLR VAN 6 TON 2 WHL - M146F
S74079	STLR VAN CARGO 12 TON - M128A2C
S74216	STLR VAN ELCT 3-6 TON - M348A2 6 TON
S74353	STLR VAN ELCT 3-6 TON - M373A2 6 TON
S74490	STLR VAN EXP 6 TON - M313
S74832	STLR VAN RPR PT STOR - M750 6 TON
S75038	STLR VAN SHOP 6 TON - M146
S75175	STLR VAN SUPPLY 12 TON - M129A2C
T10129	SHOP EQUIP STLR MTD - AN/MSM-97
T10275	SHOP EQUIP STLR MTD - SER-1968
T10412	SHOP EQUIP STLR MTD - SEER 1968
T10549	SHOP EQUIP STLR MTD - SGPRSM-68
T13152	SHOP EQUIP ORG TRKMTD - SEORL
T13374	TANK CBT FTRAC 105MM - M1 (ABRAMS)
T21509	SHOP SET ACFT STLRMTD - B-1
T21646	SHOP SET ACFT STLRMTD - B-2
T22194	SHOP SET ACFT STLRMTD - C-1
T22331	SHOP SET ACFT STLRMTD - C-2
T22468	SHOP SET ACFT STLRMTD - C-3
T22605	SHOP SET ACFT STLRMTD - C-4
T22742	SHOP SET ACFT STLRMTD - C-5
T22879	SHOP SET ACFT STLRMTD - C-6
T23016	SHOP SET ACFT STLRMTD - C-7
T23153	SHOP SET ACFT STLRMTD - C-8
T23290	SHOP SET ACFT STLRMTD - C-9
T23427	SHOP SET ACFT STLRMTD - C-11
T39654	TRUCK CARGO MLRS 8X8 - M985 WWN
T42725	TRUCK CONCRETE MOB MX - M919
T53858	TRK MAINT TEL/UTILITY - M876
T58130	SIMULATOR SET STLRMTD - AN/USM-393
T58320	SIMULATOR STA STLRMTD - AN/MPQ-T1
T61035	TRUCK TRACTOR 8X6 - M911
T61171	TRUCK TRACTOR 8X6 - M920
T91656	TRUCK TRACTOR 6X6 - M916

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LIN	VEHICLE
U43735	STORAGE FACILITY MBL - V-483/MYK-8
U58881	SUPERSTR TRANSPORTER - T52703
U68809	SURVEY SEC TRKMTD - NONE
V08844	TACTICAL INTPR FAC - AN/TSQ-43ALP
V12312	TK ASPH STOR STLR MTD - 5000 GAL
V13101	TANK CBT FTRAC 105MM - M60A3
V13270	TANK CBT FTRAC 152MM - M60A2
V39253	TELETYPEWRITER OP CEN - AN/MGC-32
V39309	TELETYPEWRITER RELAY - AN/MGC-23
V44023	TELETYPEWRITER TERM - AN/MGC-22
V60764	TEST EQUIP TLR MTD - AN/MPM-46
V60901	TEST EQUIP TLR MTD - AN/MPM-44A
V61175	TEST EQUIP TLR MTD - AN/MPM-52
W00794	TEST STATION TRK MTD - AN/MSM-79
W01351	TEST STA GM STLR MTD - AN/MSM-94
W74607	TRKNG STA GM TLR MTD - AN/MPA-54
W88575	TRACTOR FTRAC LS DED - D8K8A-58
W88699	TRACTOR FTRAC LS DED - D8K-8S-8
W90790	TRACTOR WHL IND DED - 290-M
W91074	TRACTOR WHL IND (CCE) - JD-410
X23277	TRANSPORTER BRDG FLTG - NONE
X41615	TRUCK CARGO 8 TON - M520
X41633	TRUCK CARGO 8 T W/MHC - M877
X41653	TRUCK CARGO 8 TON - M520 WWN
X44393	TRUCK DUMP 15 TON DED - LR
X44403	TRUCK DUMP 20 TON DED - F5070
X52750	TRK LIFT FRK GED 7.5T - PH-130
X56586	TRUCK STAKE 5 TON - M821 WWN
X58078	TRUCK TANK FS 2500GAL - M559
X58093	TRUCK TANK FS 2500GAL - M599 WWN
X60696	TRUCK TRACTOR WKR 5 T - M819 WWN
X60967	TRUCK TRACTOR 22 1/2T - M746
X62081	TRUCK VAN EXP 5 TON - XM791 W/W
X62203	TRUCK VAN 2-1/2 T - M292A5
X62237	TRUCK VAN EXP 5 T - M820
X62271	TRUCK VAN EXP 5 T - M820A2
X62340	TRUCK VAN SHOP 2-1/2T - M109A3
X62477	TRUCK VAN SHOP 2-1/2T - M109A3 WWN
X63299	TRUCK WRECKER 5 TON - M816 WWN
X63436	TRUCK WRECKER 10 TON - M553 WWN
Y35486	WTR PRFCN EQ TRK MTD - 1500 GPH
Y36034	WTR PRFCN EQ TRK MTD - 3000 GPH
Z04549	AIRPLANE RECON UTIL - RC-12D
Z05516	ARM DECOY SYS GM - NONE
Z32424	AD GUN SP (DIVAD) - XM247
Z37726	LAUNCHER LOADER SP - MLRS
Z41342	MAINT SHOP STLR MTD - AN/GSM-271
Z93805	TRUCK LIFT FRK DED RT - CLARK 475

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Question. Wouldn't considerable more disassembly of large equipment be required for the 747 than for the C-5?

Answer. Yes, in most cases, large equipment will require considerably more disassembly for the 747 than for the C-5. Some examples are the Infantry and Cavalry Fighting Vehicles (IFV&CFV) and the attack and utility helicopters.

For the C-5, the IFV and CFV are loadable with only their whip antennas tied down and the attack and utility helicopters are loadable with only their rotor blades folded or removed.

For the 747, the IFV and CFV must have all projections above the top of the turret removed (integrated sight, commander's hatch cover, antennas), all road wheels depressed, and the entire vehicle placed on a special load distributing pallet. In addition to folding or removing the rotor blades, the helicopters must be further reduced in height by lowering or removing the rotor head and, in some cases, removing the transmission and weapon systems' pylons.

Question. What is involved in loading large pieces of equipment, such as a Cobra attack helicopter, onto these two aircraft types? For example, do the rotors have to be removed? How much time does the disassembly take?

Answer. In most cases, large pieces of equipment will require considerably more disassembly for the 747 than for the C-5. The Cobra attack helicopter is an illustration. The Cobra can be loaded on a C-5 without any disassembly. For loading on the Boeing 747F the main rotor blades, rotor hub, mast and swash plate assembly, stub wings, tail rotor blades, fairing assemblies, transmission cowling, antennas, and ejector tube assembly must be removed. This level of disassembly requires 21 manhours for 3 hours elapsed time and reassembly requires 24 manhours for 4 hours elapsed time.

Question. Can just anybody do the disassembly and reassembly at the other end, or are specialists required?

Answer. Minor disassembly/reassembly can normally be performed by owning units. Extensive disassembly, however, frequently requires special tools, equipment, and personnel not normally a part of such units. For example a normal operational unit can fold the blades and remove antennas from an AH-64 helicopter. However, to remove the rotor heads or weapons system requires special tools, equipment, a test flight, alignment, and test firing of the weapons. Such would be the case, for example, were Cobra helicopters to be loaded on a B747F.

Question. Do we have plenty of these specialists?

The answer is speculative; however, it is likely that maintenance specialists would not be available in sufficient numbers to perform reassembly operations because of the necessity to perform these tasks at multiple sites; ie: disassembly in the United States and reassembly at one or more airfields in the theater of operations. The larger and equally unpredictable problem is the need for multiple sets of special tools and test equipment that are required if equipment is extensively disassembled. Extensive disassembly creates a requirement to test fly aircraft, and realign and test fire weapon systems, all of which require special support.

Question. What are the military implications of taking time to disassemble equipment before you can load it, and taking more time to reassemble and test it after unloading it?

Answer. Disassembly is not considered to be a major problem for deploying forces. This operation would generally be performed in the U.S. with necessary support personnel, equipment and facilities. Rather, the problem is the requirement to reassemble equipment under unpredictable conditions where the survival of the force may in fact depend upon its ability to immediately engage in combat. At the very least, major disassembly/reassembly will cause congestion at arrival airfields, create lucrative targets, and delay employment of the force in combat. In addition, to reassemble the equipment there are special requirements for tools, test equipment and personnel not normally a part of the unit.

Question. Would this loading equipment have to be disassembled before it could be loaded into a 747 and then reassembled at the end before the main cargo could be unloaded?

Answer. Loading equipment required to load wide-body aircraft would normally not accompany a particular wide-body aircraft but would be either prepositioned or delivered by one of the first arriving aircraft. This alleviates the need for a loader to accompany each aircraft.

The Air Force currently owns elevator loaders for use with wide-body commercial aircraft and 463L System Transporter Loaders for use with military aircraft, as well as a limited number of Air Transportable Loading Docks (ATLD) specifically designed for use with the C-5. The elevator loaders, which are required to load/unload the B-747, must be extensively disassembled for airlift. The 463L System loaders, which are the primary means of loading/unloading military aircraft, including the C-5, require minor disassembly when carried in the C-141 (the aircraft normally used). The C-5 ATLD requires major disassembly to convert from operational to air transportable configuration, but is a specialized piece of equipment not necessary for normal C-5 operations.

Since the Air Force uses little peacetime wide-body commercial cargo airlift, most of the elevator loaders are already palletized for transport. Therefore, only reassembly would be required when positioning the Air Force's currently owned wide-body loaders at either an onload or offload station.

Question. If the 747 has to carry its loading equipment with it, wouldn't that be taking up space that could otherwise be used for essential fighting equipment?

Answer. If the B-747 has to carry its loading equipment, that equipment would require space normally used for cargo. However, these loaders, designed to be carried in the lower lobe of a B-747, are not suitable for large bulky items. The largest items which they can support are 2½ ton trucks and some of the smaller helicopters. Loaders needed to provide expeditions off-load of the B747 have to be carried in C-141s or C-5s, or they must be highly disassembled to the point that reassembly time becomes unacceptable.

Question. Does the C-5 have to have any special loading equipment?

Answer. No. The equipment used to load C-130s and C-141s can also load the C-5.

AIRLIFT PRODUCTION PROGRAM

Question. When was the last U.S. airlift procurement program initiated?

Answer. The last production program for a pure Air Force airlifter was the C-5A program, which began in 1965 and made its last delivery in 1973. The Advanced Tanker/Cargo Aircraft program (now the KC-10 program) was initiated in 1974, and production is still in progress. Although the KC-10 does have a dual tanker/cargo role, it is responsible for a significant portion of the increased airlift capability contained in the DOD program.

ASD CORROBORATED BOEING COST ESTIMATES

Question. I understand that Boeing claims that the Air Force's Aeronautical Systems Division (ASD) has corroborated the Boeing cost estimates. Is this correct?

Answer. ASD was asked to do a preliminary evaluation of the Boeing unsolicited proposal, including the Boeing life cycle costs. ASD offered their assessment of those costs without attempting to make a consistent comparison with other airlift programs. Therefore, they did not evaluate the assumptions Boeing used in arriving at their estimates. The Headquarters USAF estimates used consistent assumptions for both the B747 and C-5B.

DIFFERENCES IN OUTLAYS IN FISCAL YEAR 1983/85 FOR 747 BUY VS. C-5B BUY

Question. What are the differences in outlays in fiscal year 1983-85?

Answer. The outlays for fiscal year 1983 through fiscal year 1985 for the C-5 and the B747 are a function of the schedule. A comparison of the schedules offered by Boeing and Lockheed and the outlay requirements needed to meet those schedules (as estimated by the Air Force) follows:

[Dollars in millions]

	Fiscal year		
	1983	1984	1985
C-5 (outlays)	$182.2	$629.4	$1,424.7
Order	2	10	12
B747 (outlays)	$563.7	$1,579.7	$1,615.9
Order	10	23	13
Difference (outlays)	$381.5	$950.3	$191.2

CRAF PROGRAM

Question. Do we already have access to almost all existing American freighter 747s through the Civilian Reserve Air Fleet (CRAF) program?

Answer. Yes. All 31 747 freighters operated by U.S. carriers are committed to CRAF.

BEST DOCUMENT AVAILABLE

Question. Can you please briefly explain the CRAF program, how it contributes to our total airlift capability, and the cost involved?

Answer. The Civil Reserve Air Fleet (CRAF) is a program designed to take advantage of the defense airlift augmentation available in the U.S. civil air fleet. Through a Memorandum of Understanding between the Department of Transportation and the Department of Defense, and annually reviewed contracts between the Military Airlift Command and U.S. airlines, aircraft are designated in advance for use by the Department of Defense in the event of an emergency. The fleet is divided into three stages which represent a gradual increase in capability. This enables the government to choose the most appropriate level of augmentation to match a given emergency and simultaneously control the impact of CRAF activation on the domestic air transportation system. The fleet has a total of 393 aircraft. A few of these are shorter range aircraft which are used to support appropriate airlift requirements. However, the vast majority of the airlift, 326 of them, are long-range passenger and cargo aircraft used for intertheater airlift augmentation. The CRAF costs the government nothing until the aircraft are used. The airlines are then paid for their services at the same rate paid to carriers who provide peacetime commercial airlift to the Department of Defense.

The current CRAF inventory can adequately cover our passenger movement requirements. However, even though the CRAF includes all of the suitable long-range cargo aircraft in the U.S. civil inventory, we still require additional cargo airlift capability in the event of a major contingency. The CRAF Enhancement Program has been designed to reduce that shortfall by adding cargo convertibility features, at government expense, to new or existing wide body passenger aircraft. It does so at approximately one-seventh the cost of acquiring and owning those assests organically, and is the most cost-effective method of increasing the bulk/oversize cargo airlift capability available in the event of a national emergency.

Question. About what percentage of our current airlift capability resides in the CRAF program?

Answer. CRAF accounts for approximately 41 percent of our current intertheater airlift capability.

Question. Are there any freighter 747s or DC-10s owned by U.S. carriers that are not currently in the CFAF program?

Answer. Federal Express owns four DC-10-10CF (convertible) freighters which are not committed to CRAF. The Military Airlift Command is currently reviewing the federal certification of those aircraft and the operational support capability of the corporation to determine their suitability for participation in the CRAF program. All other domestic 747 and DC-10 freighters are included in the CRAF.

AIRLIFT PROBLEM—OUTSIZE CAPABILITY

Question. Secretary Carlucci, on May 13, 1982, in a letter to Senator Tower, the Chairman of the Senate Armed Forces Committee, you made the following statements: ". . . the shortfall of outsize cargo capability is our most immediate problem" and "I want to state unequivocally that we do not need, nor should we be obliged

to procure excess commercial aircraft which could not carry outsize cargo and would be poorly suited for oversize equipment." Mr. Secretary, do these statements still reflect your position?

Answer. Yes.

Question. Mr. Secretary, if the Congress in its wisdom strikes the 50 C-5s requested by the Defense Department and substitutes 747s instead, would the Defense Department move out smartly in procuring these aircraft?

Answer. We would, in that case, have to reassess the entire airlift augmentation package.

Question. Do you believe that if Congress strikes the C-5's that we will end up with no airlift procurement program for fiscal year 1983?

Answer. That would be a deplorable result but it is a possibility.

NUMBER OF "SURPLUS/USED" 747'S

Question. How many "surplus/used" 747s are currently available for the Defense Department to buy under the provisions of the Senate authorization bill?

How many are owned by Boeing? How many by the airlines?

How many of the used 747 aircraft are currently owned by Boeing and how many are owned by the airlines?

Answer. The Boeing Company conducted a partial survey of the market in order to determine how many used B747 aircraft might be available for sale to support their offer to the government. They found 59 such aircraft. Eighteen of these are operated by foreign airlines. Precise data on who owns the 18 foreign aircraft is difficult to obtain. However, it appears that almost all of them are owned by foreign companies. This leaves 41 aircraft which are owned by US companies. Of these 41, 19 are owned by US airlines, nine are owned by Boeing and 13 are owned by US companies which use the aircraft in commercial leasing. Since the Senate authorization bill specifies that commercial, wide body aircraft procured must be owned by domestic companies, only the 41 US owned aircraft are available to support a used aircraft proposal. Since the DOD program states it would take 55 B747s to provide the same capability as 50 C-5Bs, there are clearly not enough used aircraft available. The shortfall would have to be made up from new or foreign aircraft.

LENGTH OF TIME TO DELIVER AIRCRAFT

Question. How long would it typically take the Defense Department to issue an RFP, perform the necessary analyses and evaluations, make a source selection, and award a contract on a major procurement such as this?

Answer. For initiation of a new major system start, it would take approximately one and one half years. In special circumstances, such as procurement of known commercially available products, this time can be reduced but a minumum of 6 months would be required.

Question. After we finally choose "the most cost-effective commercial wide-body aircraft," how much time would be involved in going through military operational testing, pilot training, and

worldwide set up of an entire logistics support system for an aircraft that is not currently in the military inventory?

Wouldn't the 747 have to be competed against the DC-10 and perhaps other aircraft to determine "the most cost-effective commercial wide-body aircraft?"

The supporters of the 747 say it can be put on the flight line several years earlier than the C-5. The Air Force says the schedule difference is less than one year. Can you please clarify this situation for us?

Answer. The Air Force agrees with the Boeing estimate of 12 months from B747 contract award to delivery of the first aircraft. The time required from C-5B contract award to delivery of the first aircraft is 38 months. This difference is 26 months; however, the contract award date for a C-5B is at least six months earlier than the B747 (assuming that the B747 can win the requisite competition with the DC-10). In addition, the time needed to activate a unit and provide viable capability is approximately nine months for the B747 (based on KC-10 experience), while the C-5B will go directly into operational service with the C-5A squadrons.

Question. After source selection, is it possible, or likely, that there would be another controversy—akin to the one we are in now—about whether the military's choice was a correct one?

Answer. The DOD source selection process is a thorough and impartial mechanism in which numerous functional and management experts devote considerable time and effort in evaluating all aspects of competing proposals. When the ultimate decision is made, it reflects a conscious identification of the best choice among the alternatives.

While the final decision is always subject to question, the Air Force experience has consistently proven the merits of the detailed evaluation of individual proposals against a set of impartial selection criteria. As a result, Air Force source selection decisions have reflected outstanding success in being sustained by Congress, OSD and the GAO.

The Air Force goes to great lengths to insure that unsuccessful offerors have the opportunity to air their concerns and receive a debreifing of specific proposal deficiencies vis-a-vis selection criteria.

While the avenues for protest and appeal are numerous, the integrity of the source selection process has stood the test of time and the Air Force is confident that future decisions will continue to be sustained. Controversy over any decision can be anticipated when it adversely impacts unsuccessful offerors, but the extent and frequency of those disagreements resulting from the source selection process is unpredictable.

Question. How much time was taken up in these areas when we introduced the KC-10 into the military inventory?

Answer. The time required to introduce the KC-10 into the inventory, from delivery to initial squadron activation was nine months. During this period, all training and support activities were conducted to achieve an initial capability immediately upon squadron activation.

Question. There are some parties to the current airlift debate who have characterized the procurement of 50 C-5B aircraft as an

"interim" or "stop-gap" measure. I believe that all members of the DOD have refuted this characterization every time it has been made. Most recently, Secretary Weinberger in a letter to Chairman Addabbo dated June 4, 1982, stated strongly and emphatically that the C-5 procurement would be anything but an "interim" measure, saying that the C-5s would be "the mainstay of our strategic airlift for well into the 21st century." The hearing record needs to be very clear on this point.

Secretary Carlucci, is the procurement of 50 C-5Bs in fiscal year 1983 in any way an "interim" or "stop-gap" measure for the U.S. airlift program?

Answer. Let me make it perfectly clear that the C-5B procurement is in no way an interim or stop-gap measure.

CRAF ENHANCEMENT PROGRAM

Question. THE CRAF program has provided us with a very cost-effective addition to our mobility capabilities. It is my hope that we will continue to have a viable CRAF program. Could you tell me what the current Air Force plans are for the CRAF Enhancement Program?

Answer. The current DOD plan funds a restructured CRAF enhancement program beginning in fiscal year 1984 at a cost of about $185 million. We are also considering the potential for accelerating this important and cost-effective program if funding availability and positive responses from the airlines indicate such a move would be prudent.

Question. Does the Air Force have any plans to pursue airlift options that will specifically address the shortage of oversize/bulk cargo capability?

Answer. Yes; two current programs address oversize/bulk cargo shortages. The C-5B has inherent oversize/bulk capability and will help reduce the shortfall in this area. In addition, the KC-10 portion of the current airlift/mobility program specifically addresses oversize/bulk shortfalls.

The Air Force continues to pursue CRAF enhancement programs as the most cost-effective solution to oversize/bulk cargo movement. Current economic realities have forced reevaluation of CRAF Enhancement Programs—all parties agree that the program is required, but execution of the program requires restructuring.

Question. Boeing is stating that they are willing to modify the used 747s at a fixed price. Air Force Secretary Mosemann testified before the House Appropriations Committee on May 19th that The Boeing Company, and I quote him, did not make it possible for the airlines to provide us an acceptable offer the last time we went out for the CRAF mod. The arrangement offered to the airlines by The Boeing Company required that the airlines take a very large risk in terms of the costs of that modification.

Do you think that this fact casts some doubt on the costs assocated with the 747 used aircraft mod? Don't you think you should go back to Boeing on the CRAF Enhancement Program and get them to make the same fixed-price offer to the airlines so that you can get some of these 747s into the CRAF program?

Answer. During the latest attempt to negotiate CRAF enhancement contracts, B747 aircraft could not be considered because The Boeing Company included a clause in their modification contract which made it very risky for carriers offering these aircraft to quote a firm fixed price. The current price quotations for aircraft modification contained in the Boeing proposal to sell B747s to the government are fixed price, not firm fixed price. They assume that subsequent negotiations will establish appropriate economic price adjustment provisions to cover allowable price changes due to factors such as inflation. The restructured CRAF Enhancement Program will be able to use the same type of contractual arrangement thanks to the provisions contained in the CRAF Enhancement Legislation which was part of the fiscal year 1982 Defense Authorization Bill. The Department of Defense still plans to take advantage of the CRAF Enhancement Program and, when this action is initiated, will obtain similar price quotations.

747 MILITARY UTILITY LIMITATIONS

Question. In comparing the military utility of the 747 and C-5, the advocates of the 747 like to speak of the C-5 as only an outsize carrier. As I see it, there are many other significant C-5 capabilities that are absent in the 747. I'd like to ask you about the capabilities of the 747.

Does it have integral, self-deploying loading ramps at both ends of the aircraft?

Does it have doors fore and aft that open up as large as the interior of the aircraft?

Does it have a strong cargo floor capable of loading the large military combat equipment?

Does it provide truck-bed height loading at both ends of the aircraft?

Does it have drive on/drive off vehicular loading?

Can it land on unpaved surfaces?

Can it land on short runways?

Can it be serviced without special support equipment?

Answer. The B747 has none of these militarily significant physical characteristics. In addition, its overall performance in an austere airfield environment is far short of the C-5B's.

MAC 747 LOADING TEST

Question. I have been told that the Military Airlift Command has conducted a two-week demonstration/verification loading test of U.S. Army and U.S. Air Force equipment on DC-10 and 747 aircraft. I find several of their conclusions appropriate to the current debate about the capabilities of the 747-200F. These come from the final report of this test.

1. Page 37—to use either the Cochran 316A loader or the military 40 K loader to load the main deck of the 747 with vehicles requires additional materials handling equipment.

2. Page 38—the 747 power roller system was unable to rotate a palletized M-551 Sheridan weighing 32,600 pounds. Ten people were required to assist the aircraft system to accomplish the loading/offloading operation.

3. Page 42—five hours is considered adequate to load the 747—three hours and 40 minutes is considered adequate to offload the 747.

4. Page 43—during sustained operations, nothing heavier than 12.5 tons should be loaded on the 747.

I can understand how you can live with these limitations for the CRAF aircraft, but they seem to me to be severe limitations on the 747 as a substitute for the C–5B. Can you tell me whether the Boeing analysis is consistent with these test results?

Answer. The Boeing analysis was generally consistent with the Military Airlift Command's (MAC) loading test. There were two exceptions. Both Boeing and the Air Force now recognize that the B747 can be loaded and unloaded in less time than that related in the 1978 loading test. Also, Boeing assumed the loading of some pieces of equipment under reduced clearance criteria. This type of loading was not demonstrated during the MAC test.

SHORTFALL IN OUTSIZE STRATEGIC AIRLIFT

Question. Much debate centers around the CMMS requirement for outsize cargo. How many other mobility studies have been conducted over the last several years that conclude that there is a shortfall in strategic outsized airlift to support rapid deployment of our forces? What is that requirement?

Answer. All of the 17 major airlift studies over the past eight years have identified large outsized cargo demands. All show large outsize shortfalls, except for those which assumed either fortuitous prepositioning or extensive warning time to allow sealift to be used for the initial outsize cargo deliveries.

NEED FOR 50 ADDITIONAL C–5B'S

Question. It has been pointed out that the outsize cargo in the CMMS scenarios is significantly less than 50 percent of the total weight. Some people wonder why the Air Force supports the position that at least 50 percent of the added airlift capability to be procured must be outsize capable. It appears to me that these two percentages cannot be directly compared, and that the outsize cargo doesn't need to be 50 percent to justify the fact that the next airlift buy should be 50 percent outsize. Don't you have to go through a detailed analysis to see what the total outsize airlift capability you need for a balanced deployment and then compare outsize capability to what you need? Do such calculations support the need for 50 additional C–5Bs?

Answer. Outsized airlift procurement recommendations in the CMMS were based upon two conclusions:

1. Mobility/Force Projection program would fall short of requirement.

2. Airlift/sealift must close combat units (with all equpment—oversized, bulk, outsized) to ensure effective fighting forces.

The CMMS recommended that at least 40 percent of the airlift capability to be added above today's capability be outsized (i.e., 10 million ton-miles per day outsize of the 25 MTM/day total recommendation). The DOD program makes a balanced start toward the

recommended level by adding 8 MTM/day outsize airlift and 9 MTM/day non-outsize in its initial increment.

ACCURACY OF CLAIMS IN DEAR COLLEAGUE LETTERS

Question. A "Dear Colleague" letter was prepared on May 25 supporting an amendment to the Defense Authorization bill to delete funds for procurement of the C-5B aircraft and instead procure commercial 747 aircraft currently available on the market. This letter incorrectly stated that the Congressional Budget Office agrees that the current C-5A fleet is sufficient to meet the outsized delivery requirements of the Congressionally mandated Mobility Study.

I understand that the Director of the CBO, Alice Rivlin, has sent a letter to all of the following quote:

"Neither this memorandum, nor any other CBO analysis, has considered the costs and effects of substituting B-747 aircraft for the C-5 aircraft."

This makes me wonder about the other claims in that letter, so I would like for you to comment on the following statements in that letter:

The amendment will save over $6 billion—Is this true? What is the truth?

Answer. Differences in life cycle costs depend on the number of B747s considered equivalent to 50 C-5Bs and on the logistics support concept for B747s.

Allowing Boeing assumptions (with which we do not fully agree) on (1) use of all PAA organic airlift aircraft, (2) maximum C-5 payloads for all missions, (3) reduced loading clearance requirements, and (4) degree of acceptable equipment disassembly, USAF loading models indicate that 55 new B747s can provide approximately the same force closure capability as 50 new C-5Bs. When Air Force assumptions on these items are applied, no number of additive 747s can provide the same improvement in force closure as 50 C-5Bs.

In fiscal year 1982 dollars, the Air Force estimates life cycle cost for 55 B747s supported organically to be $.9 billion lower than for 50 C-5Bs. The life cycle cost for the same B747s with contractor logistics support would be $2.8 billion lower than for the C-5Bs. However, the air Force is not convinced that contractor logistics support would be a viable alternative for a force with worldwide deployment responsibilities. Attached is a letter to Congressman Montgomery on the same subject.

Question. DOD has not adequately answered many questions asked by Congressional committees of the C-5 proposal—Is this true? What is the truth?

Answer. During deliberations on the fiscal year 1983 budget, the DOD has thoroughly answered numerous questions asked in hearings on almost every conceivable aspect of the airlift issue. In addition, detailed answers have been provided to well over three hundred questions submitted for the record.

C-5 SUFFICIENT TO MEET OUTSIZE REQUIREMENTS

Question. The existing fleet of 77 C-5s is sufficient to meet the outsize requirements stated in the CMMS (Congressional Mandated Mobility Studies)—Is this true? What is the truth?

Commercial widebody aircraft can meet the military needs—Is this true? What is the truth?

Answer. The existing C-5 force cannot meet the outsize cargo requirements of the Congressionally Mandated Mobility Study (CMMS) scenarios. Procurement of 50 C-5Bs will provide approximately 8 of the minimum of 10 million ton-miles per day of additional outsize airlift capability recommended by the CMMS. Substituting commercial wide-body aircraft for the C-5 would perpetuate and aggravate the imbalance in airlift capability, which presently causes the oversize/bulk cargo of Marine and Army units to arrive days before the essential firepower items of those units can be delivered.

[Clerk's note: End of questions submitted by Mr. Ginn.]

Mr. ADDABBO. We will also submit some committee questions in the record for your complete answers.

[Clerk's note: Questions submitted by Mr. Addabbo and the answers thereto follow:]

STRATEGIC AIRLIFT PRIORITIES

Question. Mr. Secretary, a broad consensus appears to be emerging that the fiscal year 1983 budget for Defense and the Five Year Defense Plan will be revised downward. Thus, this Committee, the Congress as a whole, and the "Defense community" must place considerable emphasis on: Setting priorities for programs within Defense; and on giving serious consideration to eliminating programs, modifying production schedules or scaling back programs in some form.

The Air Force has ambitious plans to "proceed apace" with the M-X, B-1, Stealth, C-5, KC-10, Re-engining KC-135's, ALCM and large buys of F-15's and F-16's over the next number of years. If fiscal realities force a reconsideration of the ability to pay for this ambitious "shopping list", which of these programs would you consider eliminating, "stretching out", or modifying in some form?

Answer. We do not believe that reductions in defense spending beyond those already agreed to by the President would be wise. Should the situation change so dramatically as to necessitate further cuts we would, of course, consider changes to some of the modernization programs you mentioned as well as other weapons systems and force structure. I would not want to speculate on what the outcome of such a review might be.

Question. In developing criteria for setting priorities for DOD's procurement needs for the next five years, a logical factor to consider is which "type" of war is more likely to occur. Do you agree that a: Crisis in the Middle East/Southwest Asia which may necessitate U.S. involvement; or an engagement with Soviet forces in a conventional war; has a much higher probability of occurring in the 1980's than a "doomsday" nuclear war between the super powers?

Answer. While a conventional engagement in any area is more likely to occur than a strategic nuclear war, there is clearly potential for escalation to theater or general nuclear war in any direct US/Soviet engagement. Our highest priority must therefore lie with preventing that sort of escalation. Consistent with that priority, we acquire and maintain a strong strategic capability while correcting conventional force deficiencies.

Question. If you do agree with that assumption, and if scaling back DOD's "Five Year Defense Plan" becomes necessary for the nation's overall "economic health" would you be willing to partially fund DOD's airlift needs by scaling back the ambitious and costly strategic nuclear "package" of MX, Stealth, ALCM's, Tridents, etc.?

Answer. I do not agree that strategic nuclear programs should be scaled back. The strategic modernization program proposed by the President is affordable—the direct cost of acquiring and operating these forces accounts for less than 15 percent of the total DOD budget. We are following the management of these programs with intense interest to insure that the costs are justified and do not grow. In that process, we have identified some efficiencies in the Trident II program, amounting to a cost avoidance of $680M (in fiscal year 83 dollars), and have recommended that modification to the Congress.

Question. The President's National Security advisor, "Judge" Clark, recently gave a speech in which he outlined a "refinement" of the military strategy formulated thus far by the Administration. This "refinement" is detailed in an eight-page "National Security Decision Memorandum" recently signed by the President. Articles describing the speech included the following comments:

> In essence, the document established priorities for the use of American military power in the event of a global war with the Soviet Union".
>
> Among the Weinberger doctrines modified by Mr. Reagan's action is the Secretary's concept of preparing the United States to fight a protracted conventional war with the Russians on all fronts."

Have you re-evaluated DOD's total airlift needs in light of this recent modification of strategy? If so, what were the results?

Have you, or are you, re-evaluating the "Five Year Defense Plan" in light of this "refinement" in military strategy?

Answer. The press reports attempting to portray some difference between what Judge Clark said and the Defense guidance put out by the Secretary are completely misleading. In fact, we participated actively in the process that led to the President's decision and the statement presented by Judge Clark is fully consistent with the strategy that was used as a basis for formulating our budget; so we had no reason whatsoever to re-evaluate our program in light of Judge Clark's statement. In fact, we think that the statement underscores the need for greater power projection capability and more substantial mobility forces, including strategic airlift.

AIRLIFT/SEALIFT/PREPOSITIONING PRIORITIES

Question. A wide variety of programs are proceeding to enhance all three components of mobility—airlift, sealift, and preposition-

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ing. Billions are to be spent on airlift alone, and many billions more will be required for sealift and prepositioning.

Describe to the Committee the "mechanics" of how the Office of the Secretary of Defense (OSD) sets priorities to develop the proper "mix" as to what level of funds should be for airlift vis-a-vis sealift vis-a-vis prepositioning.

In setting those priorities, is consideration given to cost/effective approaches such as prepositioning a fairly high percentage of "outsize" equipment in order to scale back the size of the buy needed to procure airlift capacity to transport outsize equipment?

Answer. Overall deployment objectives are provided to the Services by the Secretary of Defense in the Defense Guidance (DG). (All DoD components participate in drafting the DG.) The DG also specifies assumptions about the amount and use of warning time in meeting those objectives. The Navy is assigned responsibility for providing sealift to meet as much of the objective as possible considering the time required for movement of forces by sea. Earlier requirements must be met by airlift and prepositioning. Decisions on prepositioning are made case-by-case considering such factors as:

Whether we can preposition at or very near wartime operating locations (as we can with POMCUS in Europe) and if not whether the unit's required delivery date (RDD) is late enough to permit intratheater movement of the prepositioned equipment (as is the case with Marine equipment on maritime prepositioning ships),

Whether the type of equipment can be maintained easily in storage, and

Whether the equipment would be bought for war reserve in any case or whether a second set must be bought solely for prepositioning.

Under these rules, many items of outsize equipment are prepositioned. Unfortunately, many of the items that are excluded because they are very expensive and/or difficult to maintain in storage are also outsize (e.g., helicopters).

Question. Mr. Secretary, beyond the question of which aircraft to procure to maximize America's airlift capacity in a cost/effective manner, is the larger question of the cost/effectiveness of airlift vs. sealift. America has been involved in three major wars in the last four decades. In each of these wars, airlift played a very small role compared to sealift in terms of providing supplies and logistical support for our troops.

Granted, both weapon systems and our enemy's capabilities have changed significantly during recent decades, but could you put into perspective for the Committee the need to tremendously expand our strategic airlift capacity at this time?

Answer. The wars to which you refer each lasted for several years, so it is not surprising that sealift delivered the vast majority of cargo. We are not, however, proposing to buy airlift for jobs that can be done by sealift. We buy airlift and complementary prepositioning to meet the very early requirements that cannot be met by sealift.

Question. The Committee is advised that the capacity of a SL–7 cargo ship is 10,000 tons. In making its calculations for the "Congressionaly Mandated Mobility Study" (CMMS), the DOD cal-

culated that the average capacity of a C–5B is 75 tons. Thus, one SL–7 has the capacity of 133 C–5s. Roughly, similar statistics are also true for the 747.

The cost of the procurement and modification for one SL–7 is approximately $115 million, or less than one C–5 in then year dollars, and less than two new wide-bodied cargo planes.

Granted, sealift has the deficiency of slow speed and less flexibility than airlift. On the other hand: When one ship has the capacity of 133 airlift aircraft; and when it can provide that capacity at a small fraction of 1 percent of the procurement cost of a large fleet of airlift aircraft; and when the one ship's annual "Operating and Support" costs are a small fraction of a fleet of airlift aircraft;

Don't you agree that careful consideration should be given to placing more emphasis on sealift and the so-called "Floating POMCUS" assets as compared to airlift?

Do you agree that given the enormous capacity of sealift compared to airlift, sealift will have to play the central role for sustaining logistical support in any prolonged conflict in which the United States may become involved?

If you do agree, what is the rationale for spending significantly more sums on procuring more airlift assets, as compared to sealift?

Answer. Certainly, sealift will play a central role in any major conflict, and we do intend to rely on sealift and prepositioning for the jobs they can do. But prepositioning must be complemented by the airlift of troops and those types of equipment that are difficult or expensive to preposition. And early deployment of air defenses and forces to hold key ports, airfields, and terrain features is essential to avoid an early disaster that would negate the value of later delivery of forces by sea.

Question. The Committee has received conflicting testimony on the survivability of sealift assets.

The Air Force testified that the survivability of sealift assets is a serious deficiency of that mode of supplying troops.

The Navy has testified about their confidence regarding sealift assets reaching their destination, although obviously, in a major conflict there would be some attrition.

What is OSD's perspective on the survivability of sealift assets?

Answer. The vulnerability of sealift or airlift is scenario dependent. Both ships and aircraft and the ports and airfields they use are vulnerable to a number of means of attack and would require protection. On balance we do not see either mobility mode as inherently more vulnerable then the other.

TIMEFRAME FOR DELIVERY OF "OUTSIZED" EQUIPMENT

Question. Data provided for the record during the recent C–5B hearing stated that, under various scenarios, during the first six days of a conflict in the Southwest Asia and/or NATO area of the world, an average of: 92. 5 percent of the cargo carried by the C–5 fleet would be "bulk" and "oversized", and just 7.4 percent would be "outsized". We will place that data in the record.

The explanation for the low percentage of "outsize" cargo is that the initial days of the conflict would be devoted to moving Air Force tactical fighter squadrons.

Considering that the need for "outsize" cargo is quite modest during the initial days of a conflict, couldn't a significant amount of the "outsize" cargo be delivered in a timely manner from prepositioned equipment and/or equipment on board T-AKX "RO-RO" ships which will in effect be a "Floating POMCUS"?

Answer. Several errors appear to have been made in interpreting the table.

First, the data are cumulative (as the title says)—that is, the total amount of cargo delivered in the first five days is 17,646 tons not 52,273.

Second, the data show capabilities of the CMMS 1986 Baseline force not requirements for cargo delivery. The attached table compares requirements to capabilities for each scenario.

Third, we do not base our airlift requirement on just the first five days of deployment. Forces delivered by even the fastest sealift may not arrive at their wartime operating location for two to four weeks depending on scenario, so airlift and prepositioning must cover much more than just the first 5 days. We do plan to preposition a significant amount of cargo for early-deploying units. But this must be complemented by airlift for equipment that is very expensive or difficult to store—which also very often is outsize. Furthermore, unless we can preposition equipment at or very near wartime operating locations—which will not be the case for most units in SWA—assessments of the cost and effectiveness of prepositioning must include the cost of intratheater mobility forces and the time required for intratheater movement. Considering all the problems involved in prepositioning and intratheater movement, we do not believe we can avoid the need for additional outsize and oversize airlift.

Cumulative Air Delivery In Theater Thru Day 5
CMMS 1986 Baseline Airlift Forces

Day	Tons Delivered	%Bulk	%Oversized	%Outsized	Actual Tons Delivered Outsize	% Of Total Tons Delivered Outsize
		SCENARIO I				
0	632	43.4	30.7	25.9	164	
1	3089	16.6	73.6	9.8	303	
2	5860	26.3	66.4	7.3	428	
3	10585	39.3	55.7	5.0	529	
4	14461	36.8	58.0	5.2	752	
5	17646	31.9	60.2	7.9	1,394	
	52,273				3,570	6.8
		SCENARIO II				
0	2109	36.1	50.6	13.3	280	
1	4371	29.0	63.2	7.8	341	
2	7130	28.1	65.8	6.1	435	
3	10138	22.0	67.5	10.5	1,064	
4	13349	22.0	65.4	12.6	2,283	
5	18122	18.9	67.9	13.2	2,392	
	55,219				6,795	12.3
		SCENARIO III				
0	674	46.9	28.8	24.3	164	
1	5113	48.7	45.7	5.6	286	
2	11169	40.7	54.2	5.1	570	
3	20712	31.6	62.7	5.7	1,180	
4	29850	35.5	59.9	4.6	1,373	
5	39384	36.2	59.1	4.7	1,851	
	106,902				5,424	5.1
		SCENARIO IV				
0	632	43.4	30.7	25.9	164	
1	3089	16.6	73.6	9.8	303	
2	5860	26.3	66.4	7.3	428	
3	10585	39.3	55.7	5.0	529	
4	14461	36.8	58.0	5.2	752	
5	17646	31.9	60.2	7.9	1,394	
	52,273				3,570	6.8

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Requirements and Capabilities for Moving Outsized Cargo
CMMS FY 86 Baseline Force
(Revised 4/23/82)

	By C+		
	5	10	15
Scenario I and IV			
Required Cargo Closed at Destination	63KT	165KT	199KT
Required Cargo Delivered to Theater	94KT	182KT	217KT
% of Required Deliveries that is Outsized	25%	21%	18%
Capability to Deliver Cargo to Theater	18KT	35KT	56KT
% of Capability that is Outsized	8%	13%	14%
Scenario II			
Required Cargo Closed at Destination	74KT	132KT	206KT
Required Cargo Delivered to Theater	88KT	141KT	239KT
% of Required Deliveries that is Outsized	18%	13%	12%
Capability to Deliver Cargo to Theater	18KT	47KT	73KT
% of Capability that is Outsized	13%	14%	16%
Scenario III			
Required Cargo Closed at Destination	63KT	251KT	480KT
Required Cargo Delivered to Theater	64KT	373KT	481KT
% of Required Deliveries that is Outsized	6%	25%	27%
Capability to Deliver Cargo to Theater	39KT	76KT	119KT
% of Capability that is Outsized	5%	8%	10%

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FIRMNESS OF COSTS AND CONTRACTS

Question. In a response for the record during recent reprogramming hearings, the following "phrases" were included to explain that the eventual costs of the C–5 were hard to determine:

Since the contractor's and the Department of Defense's inflation estimates differ;

Since inflation estimates are continually subject to change;

Since formal negotiations on the C–5B have not yet begun.

In all probability, the same phrases could be applied to the "747 proposal".

Do these types of qualifications mean that the price included in a "firm fixed price contract" proposal could change significantly?

Are these "firm fixed price" proposals really a "games people play" situation?

Answer. Both Lockheed and Boeing have offered firm fixed price contracts in constant dollars, and we have no reason to expect those to change. The actual cost will, of course, depend on inflation since both contractors expect that the government will offset the effects of inflation. This is not a game but is common practice when contracts extend over many years.

Question. As mentioned, "formal negotiations" have not begun for the C–5 contract and since the DOD does not want the "747" alternative, no "formal negotiations" have been conducted regarding that proposal.

When would "formal negotiations" begin if funds are provided for either alternative?

Assuming that the Congress provides hundreds of millions of dollars for either of these "firm fixed price contracts" wouldn't the Congress simply be faced with a "cough up the money" situation if the so-called "formal negotiations" concluded that the eventual cost of the "firm fixed price contract" in "then year dollars" ended up to be significantly higher than had been estimated?

Answer. We could begin formal negotiations almost immediately with either manufacturer. If Congress were to eliminate C–5 and substitute 747s, however, we would have to reevaluate our entire airlift program and we would give serious consideration to recommending a recision request to the President. Consequently, formal negotiations would not begin quickly.

There is no reason why these formal negotiations should result in a higher price for either program. If inflation exceeds our budgetary estimates we would, of course, be faced with the choice of asking Congress for more funds or buying fewer aircraft. This situation is not unique to these particular programs.

CRITERIA USED IN CMMS STUDY

Question. Much of the debate regarding strategic airlift issues revolves around statistics and conclusions included in the DOD study referred to as the "Congressionally Mandated Mobility Study" (CMMS). This study analyzed our ability to airlift cargo to the Southwest Asia/Middle East region and/or NATO region under four different scenarios.

Isn't it true that these scenarios assume a so-called "bolt out of the blue" situation where we did not have advanced warning of hostilities and were suddenly confronted with the need to react?

Answer. No. Each CMMS scenario includes a period of warning prior to hostilities (D-Day), and in all cases the US takes some actions prior to D-Day that accelerate the arrival of forces. The amount of warning and particular actions vary among scenarios and are classified. Details are in CMMS, Volume II, page C-58 ff.

Question. In the "real world" isn't it likely that the billions of dollars we spend on intelligence—i.e., satellites, signals intelligence, etc.—would give us advance warning if major hostilities were fairly imminent?

Answer. We expect to get evidence of enemy activity under many circumstances. We cannot be sure that we would correctly interpret this as warning of imminent hostilities. Furthermore, in many cases we cannot act unilaterally but must convince other nations to grant enroute base and entry rights.

Question. Assuming that the billions spent annually on intelligence would give us advance warning—let's say one week warning—of potential or probable major hostilities where it appeared that America may very well become involved, wouldn't the DOD begin to take preliminary steps such as: Loading ships with cargo and materiel; directing equipment laden T-AKX "RO-RO" ships to deploy nearer to the potential area of conflict; and unpacking and readying equipment which may be prepositioned on land in the general vicinity of a potential conflict?

Answer. The steps we would take are hard to predict in advance. We frequently reposition naval forces to areas of potential need and certainly could do so with prepositioning ships. Under certain circumstances we might load and even sail ships. Breakout of prepositioned materiel would probably require the deployment of troops which would require host nation permission.

Question. If so, wouldn't these activities undertaken during the "warning period" enhance our ability to deploy significant assets by sealift to a potential trouble spot, thus: Alleviating to some extent the amount of cargo which the study projects must be delivered by air; and also changing the urgency of the time frame for air delivery of "outsize" cargo if much of this cargo could be delivered in a reasonable time frame by sealift because of actions undertaken during the warning period?

Answer. Certainly actions taken during warning can accelerate the arrival of sealift and thereby reduce the period of time during which we would depend on airlift and prepositioning. A mobility posture that depends heavily on early receipt of and reaction to warning runs a grave risk of failure if we do not receive or act on warning, however. We do not believe it is prudent to plan on more use of warning than is already assumed in CMMS and in this Administration's programming scenarios.

CURRENT STATUS IN CONGRESS OF DOD'S AIRLIFT PROPOSALS

Question. Mr. Carlucci, the fiscal year 1983 budget request includes: $790.1 million for KC-10s; and $800 million for C-5Bs.

However, the immediate issues before Congress are the reprogramming for the C-5B, and the supplemental request for the C-5B and the KC-10.

Question. Have any of the other three Committees (HASC, SASC, SAC), which have jurisdiction over this issue approved the C-5B reprogramming at this time?

Answer. None of the other three Committees have approved the C-5B reprogramming action.

Question. Have any of the Committees disapproved it?

Answer. The Senate Appropriations Committee has disapproved the reprogramming until the Congress has reached a decision on C-5B procurement appropriations in fiscal year 1983.

Question. What is the status of the C-5 funding in the supplemental, with regard to the Authorizing Committees?

Answer. Both the House and Senate Armed Services Committees denied the C-5B fiscal year 1982 Supplemental request of $99.1 million.

Question. Mr. Secretary, considering the reality of two facts: The Senate voted in favor of the "747 Alternative" for the fiscal year 1983 DOD authorizations; and final Congressional action on the program supplemental will be very late in the fiscal year; do you feel that the prudent course for Congress would be to resolve this issue in the regular fiscal year 1983 bill rather than in the reprogramming "process" and/or the program supplemental?

Answer. Although the Authorization Committees have denied the fiscal year 1982 supplemental request for the C-5B, the Department would prefer that the reprogramming action and the transfer of prior year funds to fiscal year 1982 be approved prior to enactment of a fiscal year 1983 appropriations Act so that the Department can commence this high priority program as soon as possible.

C-5'S CARRY LITTLE OUTSIZE CARGO EARLY

Question. In a letter on March 24, General Allen stated:

> Given the special importance of outsize cargo, (its timely delivery to our ground forces being essential) we view the shortage of outsize capable, inter-theater airlift as the most serious deficiency in our airlift forces.

The Department sent to the Congress documentation to support the decision which shows that in the first 15 days of a mobilization in each of the scenarios, between 20 and 40 percent of the payload capacity of the current C-5 fleet is used to carry outsize cargo. (Statistics provided by CBO.) Why does the current C-5 fleet carry so little outsize cargo funding the first 15 days of mobilization, especially in light of General Allen's letter which indicates outsize capacity is the most critical shortage at the present?

Answer. These percentages measure capacity by weight and there are two major factors that account for the percentages ranging from 20 to 40 percent. The first is that in the first five days of the deployment there are a large number of units that do not have a large outsize requirement. However, they are needed rapidly and we commit all available airlift assets to the movement of these units. Since these loads have a high percentage of oversize and bulk items and the overall C-5 percentage drops. These are followed by units with a large outsize requirement, but some of this

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requirement is not very dense. Helicopters fill available space long before the maximum payload is reached. Although these units require a large number of outsize sorties and tax the outsize space capacity, they do not tax the outsize weight capacity.

Question. If outsize capacity is the most pressing shortage today, what steps has the Air Force taken to improve the efficiency of the current C-5 fleet to move more outsize cargo in the early days of airlift operations?

Answer. To improve C-5 outsize-carrying capability our plan is to improve utilization rates by procuring additional spare parts and increasing aircrew ratios. Today, despite shortages of spare parts and aircrews, we plan to use our C-5s to the maximum extent possible during the early days of a deployment, at the expense of later capability. Additionally, among units with the same required delivery date and a mix of cargo types, MAC uses the C-5 first to move outsize cargo. In this way the C-5 can, to the greatest extent possible, be used to move outsize cargo rather than other cargo categories for which many aircraft have a capability. Finally, we have begun a wing modification program which by 1987 will modify our entire C-5 force and increase aircraft life by 30,000 hours.

Question. An argument offered by Department spokesmen for the low amount of outsize cargo moved by the C-5 is that there is higher-priority oversize and bulk cargo to be moved in the opening days of a mobilization. If this is so, why wouldn't it be a prudent course to add more oversize capacity, thereby, freeing the C-5s to move outsize cargo?

Answer. Adding more oversize capacity would indeed be helpful in the opening days, say up to Day 5 in some scenarios. Unfortunately, this would do nothing to accelerate delivery of those units with higher proportions of outsize equipment, whose arrival is required after Day 5 but before sealift could become effective. An outsize-capable airlifter, on the other hand, provides more military effectiveness in the sense that it can move both outsize and non-outsize loads, thereby providing the greatest responsiveness to deployment schedules for all types of combat units.

Question. What assumptions are made in the Congressionally Mandated Mobility Study (CMMS) regarding the percent of the 77 C-5s presently in the fleet that are available during the first 15 days of a crisis?

Answer. DOD requests crews, spare parts, and operational support for 70 C-5 Primary Aircraft Authorized (PAA). The other 7 are for training, depot-level maintenance and a strategic reserve. Of the 70 PAA C-5s assumed available for operational use during the first 15 days of a crisis, depending on the scenario considered, CMMS assumed that a small number (less than 10 percent) flew in support of JCS-directed, high priority requirements in another part of the world. All remaining PAA aircraft were phased into the CMMS scenarios in accordance with current planning assumptions.

Question. According to the GAO, the Air Force has stated publicly that if the KC-10s are used in a tanker "mode" their refueling capability could provide the equivalent of about 25 percent more C-5s and C-141s.

This increase in capability of the C-5s and C-141s would occur because of two factors:

The aircraft could take off with larger amounts of cargo than usual since they wouldn't need a large amount of fuel at the time of takeoff if they are refueled in flight.

They would save on "downtime" caused by landing to refuel on route to their destination.

What analysis has been done to evaluate the impact of the KC-10 in its "tanker mode" increasing the utilization of the C-5 fleet?

If an analysis has been done, please provide it for the record.

Answer. C-5 productivity increases, due to aerial refueling, vary and are a function of type of forces moved, air-distance flown, runway length available, and aerial refueling employment concepts used. Therefore, each scenario would have its own C-5 productivity increase due to aerial refueling. The Military Airlift Command has provided a first order estimate to the benefit of aerial refueling the C-5 for serveral scenarios and the C-5 producivity increase ranged from 0 to 37 percent for C-5A and 12 to 44 percent for the C-5B.

An indepth analysis has not been accomplished to evaluate the impact of employing KC-10s to refuel C-5s. Studies are currently in progress to determine optimal concepts for KC-10 operations with airlift and fighter forces. However, due to the KC-10s large cargo capability, the concepts of operation will not be limited to using the KC-10 as a tanker. Concepts of operation being analyzed include use as an airlifter, a combination tanker/airlifter, or as a tanker.

CLARIFICATION ON RECENT TESTIMONY ON C-5B

Question. An answer provided for the record in a recent hearing held by the Committee stated that: "The military utility of the C-5 design * * * stems principally from the high wing design which allows low cargo deck heights and from the high tail rear door configuration which allows airdrop."

Under what scenarios do you anticipate the C-5 carrying out its airlifter mission in an "airdrop mode"?

Answer. None at this time. Under most scenarios reception airfields are adequate to process all personnel and cargo initially moved into the theater of operations with the current airlift force. Under emergency or unusual circumstances the current C-5 (after wing modification) and C-5B could be used to augment other airlift forces in airdrop missions if the risk was deemed necessary. Tactical training will continue to be deferred until wing modification is completed in fiscal year 1987.

Question. Recent testimony indicated that in addition to the acquisition costs for the 50 C-5s, there would be "other government costs" of $1.1 billion. The highest cost item within the "other government costs" category is $511 million for "Engineering Change/Management Reserve".

Why is a half a billion dollars needed for "Engineering Change/Management Reserve" for the C-5s which will essentially be the same as the modified C-5s presently in operation?

Answer. The Engineering Change/Management Reserve for the C-5B program is set at appromixately 7 percent of anticipated contract cost. This percentage is based on historical experience at ASD. The funds are required for safety of flight and mission essen-

tial engineering changes necessary to maintain C-5B air vehicle and engine commonality with the C-5A throughout the production cycle of the C-5B. These changes also inevitably affect the peculiar support equipment, simulators, training equipment and spares.

The management reserve provides funds for the resolution of unanticipated day-to-day program problems and concerns which are beyond the scope of the contract. This area covers a broad range of occurrences such as "acts of God", schedule accelerations, unanticipated test requirements, costs associated with the government's ground and flight risk clause, etc.

Question. An estimated $191 million is projected to be needed for "Peculiar Support Equipment."

How peculiar is this equipment?

Has this equipment been manufactured for the present fleet of C-5's?

Answer. The $191 million addressed in this question is the Air Force's estimate of the amount required for acquisition of both peculiar ground support equipment and peculiar training equipment. In Air Force usage, the term "peculiar," when used in this context, means "not common to more than one weapon system." In this instance, the "peculiar" support equipment under discussion can be used only with C-5 aircraft. However, it will be common to both the existing and the new C-5 aircraft. In fact, all the support and training equipment planned for the new C-5 aircraft has already been manufactured for the existing C-5 fleet; there will be no equipment "peculiar" to only the new C-5 aircraft.

Question. $151 million of the "other government costs" is for "Technical Data". Why is this expenditure necessary in light of the fact that you are planning on simply restarting a production line for a "mature" aircraft?

Answer. Data in addition to that proposed by Lockheed is required by the Air Force to properly engineer, manage and field the new C-5B aircraft. Examples of these additional requirements are as follows:

a. Depot level T.O.'s for the C-5B new/peculiar equipment.
b. Support of T.O. validation and verification requirements.
c. Expanded T.O. in-process review requirements.
d. Additional formal engineering drawing requirements.
e. Additional data items over and above the Lockheed proposed list (records, plans, procedures, analyses, etc.).

Question. $290 million of the "other government costs" is for "other procurement costs." What is involved in this expenditure of over ¼ billion dollars?

Answer. These funds include items not contained in the Lockheed proposal, such as troop kits, European One paint scheme, POL for program support, test support for program deliveries, and plant closeout at production termination.

CLARIFICATION OF RECENT TESTIMONY ON THE "747" PROPOSAL

Question. Recent testimony before the Committee stated that the Boeing offer would convert used "747" engines to as near to new condition as possible and "each part would be warranted in a manner similar to commercial warranties".

Provide details for the record, as to the specifics of commercial part warranties for 747's.

Answer. Most commercial warranties are negotiated between manufacturer and customer. Data concerning specific negotiated warranties is marketing sensitive and not released by industry. In general, however, warranties are available on engines, avionics and airframe. On the 747, Boeing offers a standard service life warranty of ten years on all major structural components including landing gear. The level of Boeing participation is based upon the remaining service life of the component.

Question. The Air Force testified that $175 million would be needed to procure training simulators for the "747's".

Are there any used "training simulators" for 747s available on the market, such as from Braniff Airlines?

If so, what is the price of a used simulator compared to a new one?

Answer. The Air Force is not aware of any used 747 simulators being offered for sale. Since airlines share simulator time, the fact that some airlines have either curtailed or stopped 747 operations does not necessarily make 747 simulators available for sale. In the event that the Air Force would requrie 747 simulators, we would investigate the possiblity of used systems at that time.

Question. Recent testimony before the Committee stated that "other government costs" for the "747 alternative" would include $208.3 million for "engineering change orders". Why wouldn't it be necessary to expend 1/5 of a billion dollars for "engineering change orders" for the 747, considering that: Almost 600 have been manufactured, and some have already been modified to the "military airlift model" through the CRAF program?

Answer. Air Force experience indicates that Engineering Change Orders (ECOs) have been necessary throughout the production and modifications cycles. Amounts for ECOs cover any safety of flight or configuration change modifications that might be necessary once the aircraft modification program has begun. This is consistent with the methodology used for C-5B estimate, even though we have already built 77 C-5As and are presently completing the wing modification program.

(Note: Only one aircraft, a DC-10-30, has been modified to date under the CRAF enhancement program.)

Question. $280 million of the "other government costs" in the "747 alternative" is attributed to "Support Equipment and Initial Spares". Aren't "initial spares" included in the Boeing proposal?

Answer. The Boeing Operating and Support proposal included $192 million (fiscal year 1981 dollars) for initial spares. The Air Force procures initial spares in the acquisition phase of a program; therefore, the amount for initial spares is included in the $280 million. The remainder is to cover procurement of peculiar support equipment necessary to handle the 747.

DIFFERENCE BETWEEN CONTRACTORS AND THE AIR FORCE IN ESTIMATING LIFE CYCLE COSTS

Question. A central factor to consider in the C–5B vs. 747 issue is the impact on the "life cycle costs" of "Operation and Support" (O&S) costs over an extended period of time.

Answers provided for the record in recent hearings indicate that Air Force disagrees with both Boeing and Lockheed regarding their respective estimates of "Operations and Support" costs.

Question. With regard to the 747 proposal, Boeing estimates $6 billion of "Operation and Support" costs and the Air Force estimates $8.5 billion for these costs. What accounts for this $2.5 billion "difference of opinion"?

Answer. Major differences between the Air Force and the Boeing estimates for the life cycle cost of the B–747 are found in the estimates for fuel consumption, squadron manpower, and depot maintenance/spares charges.

The following is a comparison of 20 year costs of these major elements based on 42 PAA, each aircraft flying 1168 hours per year:

[Fiscal year 1981 dollars in millions]

	747–Boeing (CLS)	747–AF (ORG)
Fuel	3,292	4,462
Unit pers pay	814	1,134
Reserve pay		320
Dep Maint/Rep Sp	882	1,670

Question. Lockheed estimates the "Operation and Support" costs for 50 C–5Bs at $7.3 billion and the Air Force estimates $8.8 billion. What accounts for this $1.5 billion "difference of opinion"?

Answer. The Air Force estimate for the C–5B O&S costs is based on the C–5A operational experience but takes into consideration the economies of scale, the relative efficiency of the C–5B aircraft versus the older C–5A and the familiarity of Air Force personnel with the aircraft. Air Force estimates for depot maintenance and replenishment spares costs are approximately 50 percent higher than Lockheed estimates. In addition, the Air Force C–5B estimate included the cost of the reserve force maintenance personnel while the Lockheed estimate did not.

Question. Part of the difference of opinion between the Air Force and Boeing on "Operation and Support" costs is attributed to their respective estimates for "average peacetime fuel consumption". Apparently, the cost estimates differ by 25 percent.

Why is there such a variance of opinion regarding a statistic which should be able to be calculated precisely and accurately?

Answer. The Air Force estimate of 747 fuel consumption was based upon a study of peacetime fuel consumption for large Air Force aircraft. The 747 estimated rate of 3893 gallons per flying hour compares with 4186 gallons per flying hour for the Air Force E–4 aircraft and 3340 gallons per hour for the C–5A. Commercial airline experience with the 747 (gallons per flight hour and load factors—average ton load ÷ average ton capacity), as reported by

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Aviation Week and Space Technology on May 31, 1982, is as follows:

	Fuel note	Percent overall load factor
Flying Tiger	3,846	74.2
Pan Am	3,610	59.7
TWA	3,609	54.6
Northwest	3,676	54.3
American	3,747	60.6

The Boeing estimated rate of 2865 gallons per flight hour was based upon "representative flight mission" for the 747. The Boeing Company states that they will demonstrate the fuel burn rate levels upon which their number is based at each aircraft delivery.

Question. Specifically, what assumptions did Boeing use in calculating its statistics for estimated fuel comsumption of 747s in a military airlifter mode?

Answer. Boeing mission profiles assumed 25 percent of the flight hours in short training missions and 75 percent on logistics missions with one way payloads of 87.5 tons. These missions yielded a weighted average fuel flow 2865 gal/hour.

Question. Recent testimony before the Committee stated that in its calculation of the 747s fuel consumption, the Air Force "estimated fuel consumption rate based on expected peacetime aircraft usage over the 20 year life cycle of the aircraft."

How extensively are the C-5s used during peacetime for training or any other missions?

Answer. How does the extent of the C-5 usage in peacetime compare to the extent the Air Force assumed the 747s would be used in peacetime in calculating its estimate of 747 fuel comsumption. Comment in general, and then provide details for the record.

Answer. The fuel consumption estimates for the 747 and the C-5B were based on the same mission assumptions. Currently, approximately 25 percent of the annual C-5A flying hours are for training and 75 percent for cargo missions. The same mission profile was used for the 747 estimate which was based upon 1168 flying hours per aircraft per year.

Question. Data provided to the Committee stated that in compiling its estimates of the probable fuel consumption of the 747, one of the criteria used by the Air Force was the fuel consumption of the E-4 "National Emergency Airborne Command Post" (NEACP). This 747 is loaded with communication and electronic gear.

How does the total weight of the E-4 aircraft compare to the average weight that a 747 would fly in an airlifter mode—i.e. loaded for delivery and empty on the way back?

What is the impact of the weight—of the E-4 vs the average weight of a 747 on an airlift mission—on fuel consumption of these respective aircraft?

Answer. The following is a comparison of the weight characteristics of the E-4 and 747 aircraft.

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	Empty weight	Average weight	Max take off gross weight
E-4A	410,000	592,500	775,000
Boeing 747	344,300	588,650	833,000

Max take off gross weight is the maximum allowable gross weight of the aircraft at take off for the basic mission. Empty weight excludes crew, oil, fuel, cargo and disposable equipment. The E-4a empty weight exceeds the 747 because of the installed electronic equipment. The take-off gross weight of the 747 exceeds the E-4A because of cargo mission requirements. The average of these two weights for the 747 was used to approximate peacetime usage.

The variable of average weight ((Empty weight + Max Take off Gross weight)/2) along with variables of engine efficiency and thrust were analyzed for active Air force cargo and bomber aircraft to predict the 747 consumption rate. The estimating precedure used to predict the 747 fuel rate (3893 gallons per flight hour) predicted each Air Force active aircraft fuel consumption rate within 10 percent.

Question. Another factor regarding the differing cost estimates for "Operating and Support" costs for the 747s, is the cost of: using a "contractor logistic support" concept for operational support; compared to providing operational support through an organic support concept—i.e. having the Air Force recruit and train its own personnel for all facets of operating and supporting that 747.

To what extent does the Air Force presently rely on "contractor logistic support" for the 747's presently in the National Emergency Airborne Command Post Fleet? Has this arrangement worked satisfactorily?

Answer. For the E-4 National Emergency Airborne Command Post, the Air Force relies on "contractor logistics support" for all support except organizational level maintenance and selected intermediate level maintenance tasks. Most of the command, control, and communication equipment is organically supported at the intermediate level. For this highly specialized fleet of four aircraft, contractor legistics support has worked extremely well.

Question. Regarding Boeing's estimate of "Operations and Support" costs, what assumptions and criteria did they use in compiling their estimate? As far as you know, was it basically a matter of extrapolating their cost history of 747's presently in operation? If so, do you feel this was an appropriate way for them to develop their cost projection?

Answer. The Air Force understands that Boeing's assumptions were based on a combination of Boeing and airline experience in supporting airline aircraft. They also applied some planning factors which they extracted from Air Force cost estimating documentation, and they assessed the fuel flow based on a set of mission profiles they believe the B747 would fly during peacetime MAC operations.

Question. What assumptions or criteria did Lockheed use in developing their estimates for "Operation and Support" costs for 50 C-5B's?

Did they assume that many of the problems which have caused high "Operation and Support" costs for the present C-5 fleet will not occur in the next C-5s because of the "learning curve" developed through operations of the aircraft over the years?

Answer. The Air Force did not use Lockheed's estimate of C-5B operating and support costs. The Air Force estimates are based on the logistics improvements which have been incorporated in the C-5A and those which will be incorporaed in the C-5B.

Question. Comment on the "Operation and Support" cost during the last 3 or 4 years for the 77 C-5's in the fleet at the present time.

Answer. C-5A operating costs were relatively stable throughout the three year period of 1978-1980. In the early 1980s the price of JP4 fuel increased from $.55 to 1.16. In addition, as the flying hours increased, replenishment spare requirements and depot maintenance costs increased. The following are total C-5A operating coss (less aircraft depreciation) as reported by the Airlift Service Industrial Fund:

OPERATING COSTS

[Dollars in millions]

	Fiscal year			
	1978	1979	1980	1981
C-5A flying hours	45,278	45,345	47,292	49,207
TY dollars	$250	$275	$381	$457
Constant fiscal year 1981 dollars	$334	$336	$341	$451

MEETING C-5B DELIVERY DATES FOR AIRCRAFT AND ENGINE

Question. Describe to the Committee the extent and throughness of the study conducted to determine the capability of the contractor to meet the C-5B delivery dates included in the proposed contract. I assume the analysis included factors such as availability of skilled personnel, facilities, and conditions of the tooling equipment.

Answer. A Manufacturing/Management Production Capability Review (MM/PCR) is normally conducted as part of the source selection process. Such a review was conducted for the Lockheed proposal in the C-X competition. Such a review was not completed for the Lockheed alternative proposal—the C-5—because that proposal was determined to be outside the competitive range for the C-X competition.

To date, however, results of the Lockheed C-X MM/PCR have proven sufficiently broad in the areas of manpower and facilities to indicate that the C-5B requirements can be met. Continuing informal pre-contract discussions with Lockheed and major vendors such as General Electric have surfaced sufficient data to conclude that the C-5B tooling need not be a major concern. Once funding and authority are received, plans call for entering into a limited dollar value pre-production contract with Lockheed in order to finalize necessary technical, management and production analyses

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and plans. It is during this period that a formal MM/PCR will be conducted covering the following aspects:

(a) Tooling availability and requirements;

(b) Facilities capacity and requirements;

(c) Manpower;

(d) Subcontracting; and

(e) Quality Assurance.

Negotiations for the 50 aircraft contract will not be finalized until the results of these efforts are known.

Question. What have your audits revealed in terms of the tooling for the C-5B that is mission and/or needs replacement?

Answer. Air Force Logistics Command audits of C-5 tooling being maintained by contract show that some tooling would need to be replaced and that tooling which is not currently in use would need to be refurbished. These costs have been included in the President's Budget and C-5B program cost estimates.

Question. What percentage of the C-5B aircraft would be manufactured by subcontractors?

Answer. Over half of the C-5B will be produced by subcontractors. This is typical of any large airlift aircraft.

Question. Frequently, the inability of subcontractors to meet delivery schedules is cited as the reason for slippage in IOC's (Initial Operational Capability). Did your analysis of the C-5B delivery schedule include a comprehensive survey of subcontractors' capability to meet their delivery dates of components for the aircraft?

Answer. Most key C-5B components produced by subcontractors are presently in production as a result of our efforts to upgrade our airlift spares inventories or, in the case of AVCO for the wing, as a result of the C-5A Wing Modification program.

Question. The prime contractor for the C-5B has retained in "mothballs" the tooling equipment for the aircraft. To what extent have the subcontractors retained their tooling equipment for the aircraft and engine in a "stand-by" or "mothball" status?

Answer. The subcontractor tooling which is not presently in use has been considered in the budgeting process for either refurbishment or replacement.

Question. Page 9-3 of the "Congressionally Mandated Mobility Study" (CMMS) states "A C-5 restart would require reopening a line for the TF-39 engine or using an existing commercial engine".

(a) Has the air Force determined what engine it intends to use in the C-5B? If so, what is it?

(b) Has a recent "audit" been conducted to determine the capability of the prime contractor and subcontractors for the engine to meet the delivery dates? If so, who conducted the audit?

Answer. The C-5B will use the TF39-1C engine manufactured by General Electric. The current force of C-5As is having its TF39-1A engines upgraded to the −1C configuration at this time. Much of the tooling for the CF6-6 commercial engine, which is in production at G.E., is usable for the TF39. The Aeronautical Systems Division of Air Force Systems Command has performed a preliminary audit at General Electric and is satsified that G.E. can restart the TF39 line as advertised and can meet the schedule.

SENATE VOTE ON BOEING OPTIONS

Question. Boeing had made a variety of proposals which included various options as an alternative to the DOD's proposed approach to meeting its future airlift needs. Which of these Boeing options is assumed in the Senate's recent vote on this issue?

Answer. The Senate's vote authorized procurement of the most cost-effective commercial wide-body cargo aircraft, with priority assigned to surplus, domestic aircraft suitable for conversion to military cargo configurations. The Senate wording did address any specific proposal from the Boeing Company.

Question. What is the mix of new and/or used aircraft assumed in the "747 Alternative" approved by the full Senate?

Answer. The full Senate did not vote for a specific 747 alternative. They did, however, seem to indicate a preference for used aircraft.

Question. What is the cost of procuring a new 747, as compared to buying a used one and retrofitting it to make it capable of being a military airlifter.

Answer. In 1981 dollars, DOD cost analysts estimate that a new 747 freighter would cost $70 million, including $12 million for initial spares and support equipment, and assuming contractor logistics support. We have no firm cost data for used 747 passenger aircraft, but Boeing has offered to add cargo-carrying capability to such aircraft for $12 million each (1982 dollars).

MAINTENANCE MAN-HOURS PER HOUR OF FLIGHT FOR THE C–5

Question. Data provided to the Committee shows a very high number of "maintenance man-hours per hour of flight" for the C–5 when compared to many other aircraft in the Air Force inventory. Provide data for the record comparing the maintenance man-hours for various aircraft in the Air Force inventory.

Answer. The following table provides maintenance man-hours per flying hour for fiscal years 80/81.

	Fiscal year	
	1980	1981
C-5	50.8	41.5
B-52G	34.8	33.2
C-130E	16.2	15.9
F-111D	36.9	38.5
F-4D	30.6	32.4
F-16	18.3	20.0
A-10	10.5	9.7
F-15A/B	30.8	28.7
C-141	16.3	17.0

Since maintenance man-hour for the loading, servicing and the handling portion of support general labor is generally not applicable for the comparative examples, because these maintenance man-hours are influenced by external factors, these efforts were also excluded for the C–5. If they were included, the fiscal year 81 C–5 maintenance man-hours would be 69.9.

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Question. What is the cause of the high maintenance manhours per hour of flight for the C-5—i.e engine, avionics, etc?

Answer. Over the period of 1977-1981 the maintenance manhours per flying hour factor for the C-5A was 78.9. The single biggest contributing area was routine ground handling and servicing which averaged 32.4. The next largest factor was powerplant maintenance averaging 9.44.

Question. Has the maintenance "profile" of the C-5 improved in recent years?

Answer. Yes, over the period 1977-1981 the maintenance manhours per flying hour have dropped from 84.2 to 69.9. The mission capable rates for the same period were:

Fiscal year:	
1977	49.4
1978	54.5
1979	51.2
1980	51.9
1981	53.0

Question. What are the statistics for maintenance man-hours per hour of flight for the present fleet of C-5s during the past few years, and how do those statistics compare to the projected "maintenance man-hours per hour of flight" for the C-5s you intend to procure?

Answer. For the period 1977 to 1981, we averaged 78.9 maintenance manhours per flight hour (MMH/FH). MMH/FH have declined from 84.2 in 1977 to 69.9 in 1981. During this period, the C-5 flying hours have been limited to conserve aircraft life pending completion of the wing modification program. The utilization rate of the C-5A has been 1.8 hours per aircraft per day.

When the wing modification is complete, the C-5As will be able to fly a peacetime utilization rate of 3.2 hours per aircraft per day. Since many major maintenance requirements are more dependent on number of sorties or elapsed calendar time than on flying hours, we expect the C-5A MMH/FH to decrease to near the level we project for the C-5B.

AIRFIELDS WHICH CAN ACCOMMODATE C-5S, 747S, AND KC-10S

Question. Another factor to be considered in evaluating the airlifter issue is the question of how many airfields can accommodate the various types of aircraft being considered for procurement. What are the advantages and disadvantages of the C-5, 747, and KC-10 when they are compared in terms of their capability to land on or take off from runways of various lengths?

Answer. The C-5 and B-747 aircraft have similar landing and takeoff capabilities, while KC-10 operations require longer runways. For example, at maximum gross weight and standard day conditions, the takeoff ground run of the aircraft are: C-5—8,850; B-747—8,800; KC-10—9,800; the landing distances are: 3,720; 4,400; 4,500 respectively. These ratios remain relatively the same throughout the operating spectrum.

Question. What is the impact of heat—especially the level of heat that can be anticipated in the Middle East/Southwest Asia—on the length of the runways needed for these three types of aircraft to take off?

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Answer. Increased temperatures reduce take off performance for all aircraft. A longer runway is required for take off, provided a constant payload is maintained. Aircraft may continue to operate from any airfield with a planned cargo weight as long as the available runway is greater than critical field length. As higher temperatures are encountered, aircraft continue to operate but reduced payloads are realized.

Major APOD's in the Middle East and Southwest Asia area have been selected based on size and support available—thus offsetting the effect of temperature on airlift operations.

Question. Do your "deployment scenarios" assume that the ability to take off from various airfields with heavy loads in very hot weather is an important capability to have regarding these various types of aircraft? For example, do you assume, to some or any extent, that these aircraft may very well land for refueling in a friendly North African country before "taking off" for its ultimate destination?

Answer. Yes, operations in and out of enroute staging bases located in a hot climate are critical to our deployment capability. During the Zaire contingency the international airport at Dakar, Senegal, was the major enroute base for our airlift fleet. Enroute stations, if required, are selected based upon political constraints and airfield suitability (runway length, parking capability, ground support equipment available, etc.).

Question. As the Falklands crisis indicates, crises can occur in regions of the world where few, if any, individuals anticipated that a major crisis would occur. Comment on—and provide details for the record—the availability of these three types of aircraft to be serviced (i.e., spares, maintenance, etc.) in the various regions of the world.

Answer. All three aircraft can operate and be supported on a worldwide basis. However, the KC-10 may have a slight advantage with its existing contract logistics support agreement as it is linked to the existing maintenance practices and inventories of spare parts owned by domestic and overseas DC-10 operators at thirty different locations. Logistics support agreements with Boeing and domestic/overseas B-747 operators would provide a similar worldwide responsiveness. Although the C-5 does not have a worldwide civilian support organization like the KC/DC-10, and the B-747, the MAC airlift system provides a similar worldwide responsiveness.

At this juncture it should be reemphasized that the C-5 has the ability to onload/offload cargo independently while the KC-10 and B-747 require specialized Material Handling Equipment (MHE) at onload/offload locations. MHE will probably be available at most major airfields, however, at smaller airfields this equipment could have to be prepositioned before KC-10/B-747 operations could commence.

FUTURE OF THE CRAF PROGRAM

Question. The Civilian Reserve Air Fleet (CRAF) program has as its objective the modification of civilian wide-bodied jets which could subsequently be used by the Air Force as airlifters in crisis

situations. Past testimony over the years had strongly supported the CRAF program. However, the CRAF program is the proposed source of funds for the C-5B reprogramming. Approval of the reprogramming would leave no funds available in the CRAF program. Is this currently in the fiscal year 1984 POM?

Answer. The current DOD airlift program reinstitutes CRAF-Enhancement in fiscal year 1984 at a cost of $185 million.

Question. Earlier testimony stated that the DOD had anticipated attaining 5 "million ton miles per day" of its overall intertheater airlift through the CRAF program. In light of your proposal to use CRAF as a source of funds for a reprogramming, is it DOD's intention to eventually acquire all or most of the 5 "million ton miles" through procurement of aircraft rather than through the CRAF program?

Answer. No. The current DOD airlift program provides for a restructured CRAF Enhancement program, beginning in fiscal year 1984, that would add about 4 million ton-miles/day of oversize/bulk capacity. We are also exploring the possibilities of expanding this program if market conditions in the airline industry create favorable opportunities. Earlier references to 5 million ton-miles/day were based on the 1981 CMMS assumption about the magnitude of the CRAF-Enhancement program in fiscal year 1986.

Question. Our previous testimony indicates that originally the Air Force proposed to use its current fleet of 77 C-5A aircraft and develop/purchase new C-17 airlift aircraft to move outsized cargo; and to modify/convert a number of Civil Reserve Air Fleet (CRAF) wide-body aircraft, and to use CRAF along with its current fleet of C-141 aircraft to move bulk and oversized cargo. Is this your understanding, Mr. Secretary?

Answer. Yes, it is; however, when offered additional near-term funding for airlift, the Air Force revised its recommendation to the program contained in the President's Budget.

Question. Unfortunately, the current interim airlift proposal would take $120.9 million from the cost-effective CRAF program for fiscal years 1980, 1981, and 1982. With the depressed state of the aerospace and commercial airline industry in this country, and with wide-body aircraft parked in hangers and being unused at the present time, it would appear that some very attractive bargains could be struck with respect to CRAF. Is this being actively pursued today?

Answer. Yes, we are looking at all available opportunities to proceed with a CRAF Enhancement Program. No aircraft which could possibly be offered for the program are currently parked, but the overcapacity in the industry makes it more attractive for airlines to submit aircraft for modification and receive at least some capacity relief.

Question. Actually, we need airlift only in times of emergency. Has the Department considered buying B-747 and DC-10-30 aircraft, converting them to cargo carriers, and leasing them to the airlines, subject to call-up in time of a national emergency, and thereby avoiding costly annual operation and support costs by the Air Force?

Answer. Leasing is being considered as an option for aircraft in CRAF. Obviously, if you buy excess aircraft, you cannot lease them

back to anyone. However, the purchase of the aircraft, with an agreement to return them after modification to the airline under favorable leasing conditions, can significantly improve the cash position of some of our hard pressed civil carriers.

Question. Has the Department considered buying excess B-747 and DC-10-30 aircraft, converting them to cargo carriers, and storing them at Davis-Monthan Air Force base until needed, and thus avoid costly annual operation and support costs?

Answer. The option of buying excess B-747s and DC-10s and placing them in storage at Davis-Monthan Air Force Base ignores the primary reason for airlift—timely response. Such stored aircraft lack the crews, parts and responsiveness needed to provide airlift during the critical early days of a crisis. It would take weeks to get a stored aircraft ready to fly.

Question. It would appear that some of the anticipated CRAF costs can now be avoided. For example, the Air Force should not be required to pay the airlines for "down time" while the wide-body aircraft are being converted to cargo carriers because, for the most part, they are already down and not being used. Could B-747 and DC-10-30 aircraft be converted at a modest cost and pay the airlines only for the added weight and costly annual operation and support costs?

Answer. No, aircraft which stand to be participants in the CRAF Enhancement Program are not currently parked. And if they were, they would lack the maintenance, supply and crew support needed for timely response to an emergency. And with airlift, timely response is the only acceptable kind.

Question. Could the Department consider any of the options I cited, together with the purchase of a squadron of say 20 B-747s to provide proficiency training to active and reserve components, and thus avoid much of the costly annual operation and support costs?

Answer. The Air Force is interested in any option which avoids the costly annual operation and support costs. However, any purchase of B-747s would considerably dilute potential savings.

Question. If the C-5A is a far more efficient cargo carrier than the B-747, why is it that the commercial airlines have not purchased C-5s?

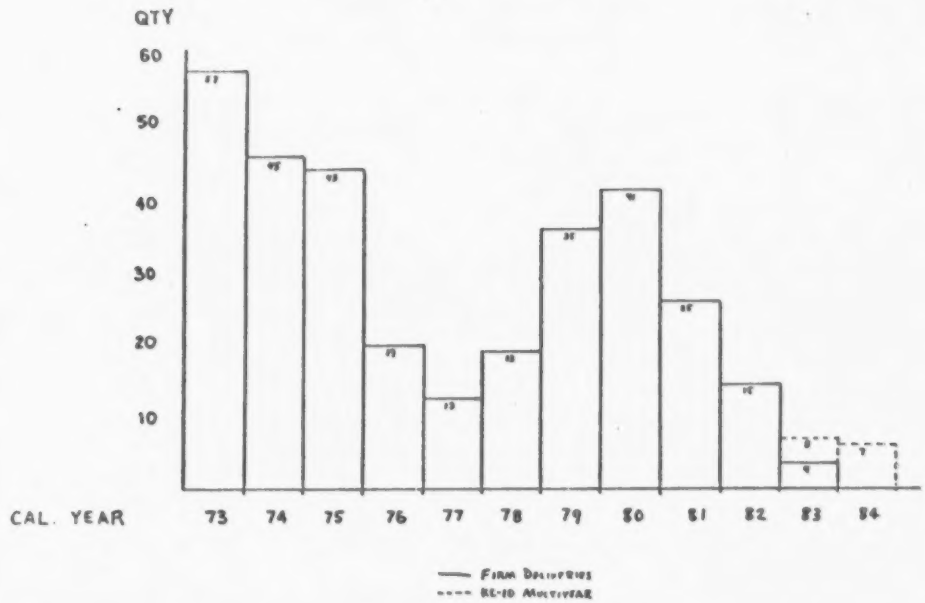
Answer. The C-5 is a far more efficient airlifter for military purposes. It can operate without sophisticated ground support equipment and has doors and a cargo floor which accommodate a wide variety of equipment. The military pays a weight penalty for this capability. Civil carriers have no demand for the movement of such cargo to unsupported locations. Therefore, they opt for an aircraft designed to support the movement of bulk cargo from major port to major port.

KC-10 PRODUCTION HISTORY

Question. $790.1 million is requested for fiscal year 1983 for KC-10s. The KC-10 is a slightly modified DC-10. Recent testimony stated that the "last of the on-order DC-10s will be delivered in November 1982". How does the recent production rate of DC-10s compare to the production rate of the past 5 to 7 years?

Answer.

DC/KC-10 DELIVERY HISTORY



Question. Have a substantial number of the DC–10 production workers been laid off in recent years?

Answer. Yes. Douglas Aircraft DC–10/KC–10 deliveries decreased over 80 percent in the past two years; worker reductions were a necessary result. From over 13,000 workers in January 1980, the force had decreased to under 4500 by January 1982. In the first half of this year, another 800 workers were laid off; and 700 more layoff are expected in the second half of the year.

Question. If so, do you anticipate any problems or delays in "gearing up" for KC–10 productions?

Answer. No. Rather than gearing up, the contractor is gearing down from 25 aircraft in 1981 to 15 in 1982 to eight in 1983. The employees laid off or projected for layoff are excess to the needs of an eight aircraft per year production line.

Question. As mentioned, the last of the DC–10s on order will be delivered in about 5 months. What percentage of the DC–10 is manufactured by subcontractors?

Answer. On the basis of cost, subcontractors manufacture 51 percent of the DC–10; Douglas manufactures 41 percent; and other McDonnell-Douglas components manufacture the remaining 8 percent. On the KC–10, the percentages are 47 percent, 43 percent, and 10 percent respectively.

Question. Has the subcontractor's "industrial base" for manufacturing components for the DC–10 "wound down" significantly in recent years? If so, do you think that will have an adverse impact on meeting the production schedule for the 44 KC–10s you intend to procure?

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Answer. The subcontractor base has decreased substantially in response to the greatly reduced order quantities. A number of the smaller vendors have left or are thinking of leaving the business. However, we do not expect any impact on the 44 KC-10 procurement because of several steps taken by Douglas. Because their own machine shops are operating at only a third of their capability, some formerly subcontracted work has been brought in-house, and more work will be if necessary. For items requiring special skills, Douglas has sought alternate suppliers. The most important step, however, has been the ordering of large assemblies in advance of Government orders. As examples, the fuselage for the first of the 44 aircraft has already been ordered from General Dynamics, the subcontractor. The wings for the first four aircraft are already released for production. These actions require considerable financial exposure for the contractor but will promote on-time deliveries.

Question. Has the DOD conducted an audit to determine the contractor's ability to manufacture the 44 KC-10s in the time frame and cost that he has estimated?

Answer. Yes, both the program office and the Air Force Plant Representative Office have conducted numerous reviews of the the contractor's capabilities. There is no reason to suspect any schedule delays. It must also be remembered that the cost are contained in a fixed-price-with-escalation contract. This has precluded any cost problems and should continue to do so in the future.

USED PLANE MARKET

Question. For various reasons, commercial airlines worldwide have a large number of aircraft which are surplus to their needs. These surplus aircraft include a number of wide-bodied or "jumbo" aircraft. What is the situation regarding the worldwide surplus of "jumbo" jets? How many are there?

Answer. The exact number of aircraft offered for sale varies from month to month. DOD has not survey the market. Data from the manufacturers indicates that there are about 60 747s available (about 40 from domestic and about 20 from foreign sources) and about 20 DC-10s available (about 5 from domestic and about 15 from foreign sources).

As many as 20 L-1011s and a few A-300s may also be available, but no freighter version of these aircraft has ever been built. Consequently, these probably would not be candidates for conversion.

Question. How many surplus 747s are for sale?

Answer. The Boeing Company estimates that about 41 747s are available for sale from U.S. owners. Of these, 19 are owned by U.S. airlines, 13 are owned by banks or leasing organizations and 8 are owned by Boeing but leased to non-U.S. carriers.

Question. Are any DC-10s on the "used plane" market? If so, what considerations have been given to purchasing them and converting them to KC-10s? What would be the cost of such a procurement and conversion as opposed to procurement of newly manfactured KC-10s?

Answer. Yes, there are DC-10s available for sale from U.S. airlines. However, the vast majority of DC-10s owned by U.S. carriers are DC-10-10s. These aircraft do not even have the capability of

the DC-10-30, which is the closest model to the KC-10 in terms of gross weight and range performance. And even the DC-10-30 is less capable than the KC-10. Although the aircraft are described as 88 percent common in terms of parts, they are substantially different in basic fuselage structure. In fiscal year 82 dollars, it would cost approximately $60M to purchase and modify these aircraft. This is more than the cost of new KC-10s.

NATO SCENARIO FOR AIRLIFT NEEDS

Question. Studies used to defend or explain the need for significantly expanded airlift capability have assumed various "war scenarios". With regard to the need for airlift to support our NATO commitment, the Committee would like some information on DOD's views. Over the years, billions of dollars have been expended to "preposition" equipment in Western Europe. What is the "tonnage" of that equipment?

Answer. Western Europe prepositioning as of the end of fiscal year 82 will be 224,000 short tons of unit equipment in unit sets (POMCUS) and 151,000 short tons of subsistence, clothing, tentage, medical supplies, repair parts, and major items of war reserve stocks.

Question. Is the prepositioned equipment in Western Europe "balanced" in terms of the proportion of oversized prepositioned equipment being similar to the proportion of equipment that is oversized in a typical fighting unit?

Answer. Although we do not require a specific "balance", we do preposition a unit set configuration of all equipment types not prohibited from prepositioning. Several criteria are considered in determining whether a type of equipment is prepositioned: difficulty of maintenance in storage; whether or not the particular item is already designated as a theater war reserve item required to be maintained in theater storage; affordability of high value items such as electronics, air defense systems, missile systems, etc; and whether or not the item is transportation significant in the early stages of deployment.

Question. How long will it take for our "sealift assets" to deliver equipment to Western Europe?

Answer. Our simulation of the CMMS NATO scenario indicates we could expect initial units to arrive in their respective combat area of operation within 14-15 days of a decision to deploy by fast sealift (SL-7) or within 27-30 days by conventional sealift.

Question. Past testimony has indicated that the KC-10 is the ideal aircraft to support the deployment of tactical aircraft because of its "dual capability" as a tanker and an "airlifter". Presumably, in the initial days of a NATO conflict, the deployment of A-10s, F-15s, and F-16s would be of highest priority.

Of the three aircraft being considered for procurement—C-5s, 747s, and KC-10s—do you consider the KC-10 the most important in terms of increasing our overall capability to fulfill our NATO commitments?

Answer. During the early days of a deployment to Europe, the contributions of the KC-10 cannot be overstated. Its unique dual role is especially valuable during long-range nonstop movement of

Air Force tactical units. However, C-5s and wide-bodied civil aircraft would also play key roles in fulfilling our NATO commitments:

C-5s because they, alone, can carry the combat essential outsize equipment that is not appropriate to preposition and that would arrive too late if transported by sea.

Wide-bodies because of their impressive capability to move large oversize/bulk payloads over long distances.

C-17

Question. The Air Force continues to support development of a new airlifter for the long term. The originally announced winner of the C-X competition, the C-17, is evidently viewed as that airlifter. On April 15, the Secretary of Defense stated his intention of using unobligated fiscal year 1981 funds provided for the C-X for "a modestly paced research and development program, based on the C-17 design". As of March 31, the unobligated balance in the C-X account was $31.8 million. Do you intend to use all these funds for a C-17 program?

Answer. Yes, we anticipate going on contract this summer for the preliminary technology efforts on the C-17.

Question. Specifically, what work will be performed with the unobligated fiscal year 1981 funds?

Answer. During the remainder of fiscal year 1982 and fiscal year 1983 we will do preliminary development work on those areas recommended by NASA for early technological evaluation. This work, on such things as core thrust reversing and low speed flow separation in the flap area, will be applicable to any new airlifter, either military or civilian.

Question. What is the status of negotiations with the C-17 contractor?

Answer. Negotiations have been completed on the initial phase of the C-17 effort. This phase will support a full scale development decision by fiscal year 1985.

Question. If a C-17 program is approved and undertaken, what is the total projected cost of the development program? What are projected procurement costs?

Answer. The C-17 development program will cost approximately two and a half billion in current dollars. The recurring procurement cost will vary depending on the total number of aircraft produced but will most likely be between 50 and 60 million dollars per unit.

Question. What would the IOC of a C-17 be?

Answer. We are looking for a C-17 IOC in the early 1990s. Beginning work now on the technological areas pointed out by NASA will assure us of a properly paced development program with very low risk.

Question. There are no funds requested in the fiscal year 1983 budget for R. & D. on a C-17. Will the unobligated fiscal year 1981 funds carry the effort until the end of fiscal year 1983? If not, what do you intend to do?

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Answer. Yes, the work which we have defined for the remainder of this year and through fiscal year 1983 is scoped to require no more than the funds available from fiscal year 1981.

Question. Is the C-17 funded in the 84 POM? If so, what is its priority?

Answer. Yes. The C-17 program is contained in the fiscal year 84 POM and remains an integral part of our total long term airlift strategy.

STATUS OF COMPREHENSIVE LONG-TERM AIRLIFT ACQUISITION PLAN

Question. In answering a question in a recent Senate hearing, a witness stated that "A comprehensive long-term airlift acquisition plan will be presented to the Congress during the fiscal year 1984 hearings . . ."

(a) What is the current status of that study?

(b) Has this study reached any preliminary conclusions?

(c) Is this study taking into consideration any changes in or refinements in military strategy as recently articulated by the National Security Advisor, Mr. William Clark?

Answer. The Department is still preparing its long-term airlift acquisition plan to be presented during hearings on the fiscal year 1984 budget. Congressional action on the President's fiscal year 1983 proposals could, of course, heavily influence the fiscal year 1984 program. The strategy described by Judge Clark is fully consistent with that used in formulating the fiscal year 1983-87 DOD program.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

Mr. ADDABBO. The committee stands adjourned.

THURSDAY, JUNE 17, 1982.

R. & D. TECHNOLOGY BASE

WITNESSES

ROBERT S. COOPER, DIRECTOR, DARPA

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MARVIN E. LASSER, DIRECTOR OF ARMY RESEARCH, DEPUTY CHIEF OF STAFF FOR RESEARCH DEVELOPMENT AND ACQUISITION, DEPARTMENT OF ARMY

JEROME A. SMITH, TECHNICAL DIRECTOR, OFFICE OF NAVAL RESEARCH, DEPARTMENT OF NAVY

LEM HILL, TECHNICAL DIRECTOR, OFFICE OF NAVAL TECHNOLOGY, DEPARTMENT OF NAVY

O. CHARLES WILLIAMS, DEPUTY FOR ADVANCE TECHNOLOGY, OFFICE OF THE ASSISTANT SECRETARY OF THE AIR FORCE, RESEARCH DEVELOPMENT AND LOGISTICS, DEPARTMENT OF THE AIR FORCE

INTRODUCTION

Mr. MURTHA [presiding.] The committee will come to order.

This morning the committee will hear testimony on the technology base programs of the Department of Defense. The technology base comprises the basic and exploratory reserarch portion of DOD's total RDT&E effort.

In the fiscal year 1983 budget, funding for technology base totals $3.34 billion, which represents 14 percent of the entire RDT&E request of $24.3 billion.

Rather than discussing specific programs, we are more interested in learning the mechanics of how this budget request was formulated, how DOD's future requirements are used as the basis for funding technology base research, and the nature and extent of problems related to the management and execution of the program.

The witnesses are Dr. Robert Cooper, Director of DARPA; Mr. H. Mark Grove of USDRE; Dr. Marvin Lasser of the Army; Dr. Jerome Smith, and Dr. Lem Hill of the Navy; and Dr. O. Charles Williams of the Air Force.

Gentlemen, your full statements will be placed in the record at this point.

[The statements follow:]

DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

FISCAL YEAR 1983 RESEARCH & DEVELOPMENT PROGRAM

STATEMENT

BY

DR. ROBERT S. COOPER

DIRECTOR

BEFORE THE DEFENSE SUBCOMMITTEE OF

THE HOUSE APPROPRIATIONS COMMITTEE

JUNE 17, 1982

The Defense Advanced Research Projects Agency invests in high technology for the solution of mid- to long-term National security problems and also provides technical management and guidance to multi-Service programs of National significance. The programs undertaken range from basic scientific investigations by which new phenomenology is discovered to feasibility demonstrations conducted in cooperation with the Services.

The FY 1983 budget request for the Defense Advanced Research Projects Agency is $756.8 million, an increase of $80.5 million over the FY 1982 appropriation. This represents a growth of approximately 5.7% with adjustment for inflation. The proposed investment for basic research (6.1) is $112.1 million and will provide for broadening of our science and technology base within both universities and industry. The principal research thrusts involve new material developments utilizing techniques such as rapid solidification and submicron processing; computer and communication sciences for developing new information processing technology that will form the basis for future intelligent, network-based, military systems; unconventional detection and target penetration research; and geophysical research to develop new technological options for monitoring nuclear explosion events.

Our request of $636.6 million for exploratory development (6.2) in FY 1983, reflects the outgrowth/expansion of basic research in key technology areas; strategic efforts such as space surveillance, laser communications, and high energy laser technologies; tactical--in ocean monitoring and control, target acquisition and engagement and weapon technologies; particle beam technologies; integrated communications and control technologies; and material processing technologies.

Lastly, the budget request includes $8.1 mission for agency management and administrative expenses, to include salaries, travel, supplies, equipment and rent. The total budget request ($756.8 million) represents approximately 17.6% of the DoD's total investment in science and technology.

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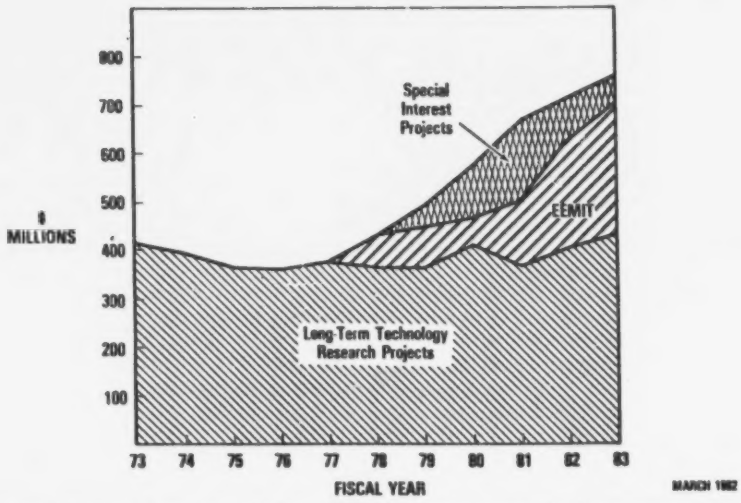
Beginning in 1978 the Agency began what has become a period of substantial growth. This is due primarily to special interest projects and large scale technology feasibility demonstrations. The special interest projects are those which the Congress recommended for centralized technical management by DARPA. There are three programs within this category, namely: Charged Particle Beam Technology, Assault Breaker and the Blue-Green Laser for submarine laser communications. The major technology demonstration programs are identified as experimental evaluation projects (PE 62711E). They are primarily Forward Swept Wing, Teal Ruby, Space-Based Laser, Advanced Space-Based IR Surveillance and classified programs. The relative contribution of these activities to DARPA's overall funding trends is reflected in the Figure below.

DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

FUNDING TRENDS
(CONSTANT FY 83 DOLLARS)

DARPA



As can be seen from the chart, DARPA's investment in long term technology and research projects has remained almost constant in buying power during the last ten years. Program element descriptive summaries have been previously provided to the Committee which fully describes the Agency's proposed programs. Therefore, because of their National significance and the Committee's interest, I would like to use this opportunity to provide a brief report of our status and plans within the special interest and major feasibility demonstration programs.

The Forward Swept Wing, now known as X29-A, is a manned technology demonstrator platform made possible primarily by advances in composites materials and digital flight control systems.

Using these advanced technologies, large scale aeroelastically tailored composite wings have been designed, and fabricated, and tested and have conclusively demonstrated the ability to solve the aerodynamic structural divergence problem which has previously prevented exploitation of the advantages of the forward swept wing configuration. These include substantial reduction of air frame costs and weight, superior low speed capabilities and high angle of attack performance, as well as high aerodynamic efficiency. Our analysis indicates that a forward swept wing aircraft could be as much as 25-30% lighter than an equivalent aft-swept aircraft, or have the equivalent of 25-30% range/payload performance improvement.

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The excellent low-speed stability and control characteristics, lift capability and enhanced transonic performance make substantial new capabilities possible; particularly significant where runway denial or operation from small ships is a concern. Final design has been completed, a single contractor has been selected, and fabrication has begun--first flight is scheduled for early 1984.

The Submarine Laser Communications (SLC) program is a joint DARPA/Navy effort to develop the technology necessary to provide critical communications, using blue-green lasers, to strategic missile submarines (SSBNs) and attack submarines (SSNs). It is expected that success in development will substantially enhance our submarine force fighting effectiveness with increased robustness and survivability of the SSBN command, control, and communications (C3) system well into the post-attack period. In addition, it should allow critical messages to be sent to SSBNs without compromising the submarine's natural covertness.

The focus of our efforts is on development of an airborne pre-operational demonstration system which can provide substantial capability in the near term. In addition we are concurrently pursuing the technology which will eventually permit a satellite based system design and development.

Major accomplishments include the demonstration of communications from an aircraft through clouds and water to a Navy submarine. By 1984, aircraft and submarine equipment will support communications in full daylight through heavy clouds.

The Particle Beam Technology program emphasizes charged particle beam concepts for applications in a variety of advanced weapon systems. Interest in these concepts is stimulated by the expectation that particle beams can deliver large amounts of energy at light speed and lethally deposit it deep within a target with high coupling efficiency.

The key issue for charged particle beams is their ability to propagate in the atmosphere. The essential next step in research is to provide the required high-energy accelerator to demonstrate the feasibility of predictably propagating powerful electron beams to distances of military interest. Construction of the advanced test accelerator (ATA) at Lawrence Livermore National Laboratory is scheduled for completion at the end of FY 1982 and in FY 1983, charged particle beam research efforts will focus on achieving full operation of the ATA and on developing the models and diagnostics required to interpret ATA propagation experiments.

Work is also proceeding on the development of neutral particle beam systems which constitute a third alternative for space-based directed-energy weapons, along with chemical lasers (TRIAD) and short wavelength lasers; these latter two are currently receiving primary emphasis and funding.

The Space-Based Laser (SBL) development centers on the DARPA TRIAD in support of generic SBL system technology. In addition, there are substantial technology programs at DARPA and in the Services both in support of our chemical laser engineering feasibility effort and research leading to shorter wavelength systems which may eventually provide even greater SBL system capability. The major experimental evaluation projects in this area and those intended to demonstrate basic feasibility of SBL, are the TRIAD programs.

TALON GOLD is an experiment carried by the space shuttle, to develop and test the requisite pointing and tracking capabilities. The performance goals represent improvement over previously demonstrated pointing accuracies. Success in this work will have important implications.

ALPHA is a high-power, chemical laser, ground-based demonstration to establish its feasibility.

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LODE (Large Optics Demonstration Experiment) will fabricate a large mirror, demonstrate complex inter-active control systems, and energy management technology in a series of ground-based experiments that simulate the space environment.

The TRIAD programs are all scheduled for demonstration to permit a decision on possible utility. The necessary work in system design and evaluation will be undertaken by the Air Force in a closely coordinated effort.

Teal Ruby is a space-based experiment to evaluate infrared surveillance for detection of aircraft targets against the earth's clutter background. In addition, Teal Ruby will provide proof-of-concept for other surveillance functions, develop a comprehensive and global radiometric background data base, and space qualify first generation advanced IR sensor surveillance technology.

The Teal Ruby experiment represents the first large scale implementation of a two dimensional IR detector array and will also use the lightweight techniques developed in the HALO technology program for design and manufacture of the Teal Ruby telescope. It will be launched by the shuttle in early FY 1984 and will operate in space for a minimum of one year as the primary payload of the Air Force space test program satellite P80-1.

The Advanced Sensor Demonstration (ASD) program is an aggressive technology development effort for second generation IR staring technology. The effort will pursue critical technologies expected to mature in the 1987-1988 period for detection and tracking against the earth's background; and against a sky background. The preliminary concept of such a sensor incorporates a telescope with optical filters, a focal plane of detectors, a cryogenic refrigerator to cool the plane, and an adaptive processor that controls the system and can convert sensor data into target track information for use by small ground terminals.

The Assault Breaker program is being completed in FY 1982. It will have successfully demonstrated the technology for the standoff acquisition and destruction of armored formations at ranges beyond the forward edge of the battle area. The system includes Assault Breaker ground launched missiles (PATRIOT and LANCE) and the associated Pave Mover low probability of intercept radars. The radar provides both the standoff surveillance to find and track and the guidance for standoff missile attack. The missiles and their munition dispensers provide the capability for delivering terminally guided submissiles and submunitions to a high degree of accuracy. This demonstrated technology is being transferred to the Army and Air Force for follow-on development and fielding.

I believe the Defense Advanced Research Projects Agency program provides sufficiently broad and balanced investment in advanced research to insure we meet with no surprises from our adversaries and that it will also provide the nation with the know-how required to insure a viable means for acquiring the technologically advanced weapons upon which our strategy for countering the numerical superiority of our adversaries depends.

With your continuing support, we can accomplish these goals.

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BIOGRAPHICAL INFORMATION

ROBERT S. COOPER

DIRECTOR, DARPA

EDUCATION:

Bachelor Degree, Electrical Engineering, University of Iowa
Master Degree, Electrical Engineering, Ohio State University
Doctor of Science Degree, Electrical Engineering, Massachusetts Institute of Technology

ACADEMIC HONORS:

University of Iowa Graduate with Distinction
Ohio State University Westinghouse Fellow
M.I.T. Ford Foundation Post Doctoral Fellow

EXPERIENCE:

August 1981 to present
Director of the Defense Advanced Research Projects Agency. Chief executive officer of an independent Defense agency responsible for research and exploratory developmental concepts that are not yet identifiable with a specific military requirement or Service mission, or which relate to the function of more than one Military Service. Provides technical direction and establishes management policy for an agency of about 145 people conducting R&D projects totalling more than $700 million per year.

1979-1981
Vice President, Engineering, Satellite Business Systems. In charge of all research and development of an advanced, digital, burst communication system employing satellites and customer premise earth stations to provide integrated voice, high speed data, electronic mail and video teleconferencing services to SBS customers.

1975-1979
Director of NASA Goddard Space Flight Center. Chief executive officer of an organization employing 3,700 scientists, engineers and support personnel engaged in space related research and development projects at an expenditure rate of about $800M per year. Job involved setting policy and determining direction of major research programs, garnering NASA, White House and Con gressional support for these programs and directing their execution. Responsible for launch vehicle operation employing the Thor-Delta launch vehicle at an average rate of 10-12 per year from both Eastern Test Range and Western Test Range. Also responsible for worldwide satellite tracking system and NASA communications (NASCOM). Some representative Goddard research programs were: Space Science research in astronomy, astrophysics, magnetospheric physics, infrared and ultraviolet observational equipment, high energy physics and astronomy. Applied Science research in atmospheric observation from space and weather prediction, geophysics, oceanography, land observation from

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space and advanced earth observational instrument development. Engineering research in spacecraft stabilization and control, propulsion, materials, data processing and analysis, and communications.

1972-1975

Assistant Director of Defense Research and Engineering, Department of Defense. Set policy, established DDR&E program direction, budgets and monitored programs in Defense Satellite Systems, High Energy Laser Weapon programs, Defense Mapping Agency, and provided DDR&E coordination with all intelligence-related R&D.

1968-1972

Staff member, Group Leader and Division Director at MIT Lincoln Laboratory. Participated in and managed research and development programs ranging over a spectrum of the basic and applied engineering sciences. Some example research activities were: radar discrimination of ICBM reentry vehicles, plasma physics and radar scattering from ICBM ionized wakes, infrared and optical ICBM signatures, infrared observational equipment development, high energy laser research, laser radar development and laser spectroscopy.

1963-1968

Assistant Professor of Electrical Engineering, MIT and Staff Member in the Research Laboratory for Electronics. Conducted research in plasma physics and electromagnetic scattering from plasmas. Led a small research group in the study of collective plasma phenomena.

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STATEMENT OF THE ASSISTANT DEPUTY UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ADVANCED TECHNOLOGY

Mr. Chairman and Members of the Committee

I. INTRODUCTION

I am grateful for the opportunity to testify in support of the Department of Defense FY 1983 Science and Technology (S&T) Program. This hearing is the first time I have had the pleasure of addressing this committee, and I would like to begin by briefly reviewing the changes the present Administration has already made and the emphasis I intend to place in managing the program.

As you know, the Secretary of Defense and Under Secretary of Defense for Research and Engineering have proposed an Assistant Secretary of Defense for Research and Technology who will also serve as Director, Defense Advanced Research Projects Agency. We will be working very closely with the new Assistant Secretary to provide a better basis for R&D planning, improved coordination between the Services and Defense Agencies and earlier insertion of successful technology demonstrations into new systems.

Today, I would like to describe to you our objectives for the DoD S&T Program, how we view the threat represented by the very large Soviet RDT&E effort, how we plan to capitalize on the strength of our system -- our free industry, universities, allies and the openness of our society to offset the Soviet numerical and budgetary advantages, and how we -- intend to incorporate the results of various studies of the Technology Base into a more efficient and effective program.

Our goals and objectives are to use our superior technology to offset Soviet numerical superiority, to keep ahead of the growing Soviet technical capability, to maintain the capability of our military systems, to reduce costs, to improve the productivity in our industrial base, and to enhance the return on the country's investment in defense systems.

To achieve these objectives we are utilizing all three of our major resources. More than half of the S&T Program is executed by U.S. industry; about one-sixth by universities; and about one-third by the DoD in-house laboratories. Over half of our basic research program is executed by the universities and I want to return later to a special study concerning their ability to support our efforts and our plans for enhancing that capability. I also want to discuss the results of a special study on the DoD laboratories and the resulting recommendations for strengthening that very important resource.

The responsibility assigned is large, but not overwhelming. The challenges we face are exciting but not excessive. Our resources are strained, but with the support of the Congress which we have enjoyed in the past, I am confident that we can continue to rely on our scientists and engineers and the advantages of our free and open society to offset the formidable threat we face.

The DoD Science and Technology Program includes Research (6.1),

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Exploratory Development (6.2) and Advanced Technology Developments (6.3A) of the three Military Departments and the Defense Agencies (Defense Advanced Research Projects Agency, Defense Nuclear Agency, and the Uniformed Services University of the Health Sciences). Our request for FY 1983 is $4.3 billion or approximately two percent of the total DoD budget. The details are outlined in Table 1.

Table 1

Science and Technology Program

(Dollars in Million)

Research	FY 1982	FY 1983
Military Departments	602	714
Defense Agencies	93	114
Total Research	695	828
Exploratory Research		
Military Departments	1,374	1,546
Defense Agencies	839	963
Total Exploratory Development	2,213	2,509
Advanced Exploratory Developments	736	952
TOTAL SCIENCE AND TECHNOLOGY	3,644	4,289

II. POLICIES

The entire U.S. military structure is based upon exploiting technological superiority. Even if we wished to adopt a different strategy, it is very likely that we no longer have the option to change. The Soviet Union and the Warsaw Pact nations outnumber us and our NATO allies in terms of manpower and equipment of war to such a great extent that we cannot match them tank for tank or missile for missile without increasing our military forces beyond numbers our economy can support, short of mobilization. Thus a strong, viable and productive S&T Program is essential to our military security.

We continue to have the overall objective in the DoD S&T Program to maintain a level of technological supremacy which enables the United States to develop, acquire and maintain military capabilities needed for our national security. To this end we are seeking continued real growth in the program.

In the future we intend to look at long-term technology needs based on scenarios which envision that future conflicts will take place under very fluid battlefield conditions. This assumption postulates that improved weapons (tanks, aircraft, ships, etc.) will not be basically different from those of today but that major concentrations of troops and equipment may not be practical. Therefore, new tradeoffs among mobility, agility and firepower become essential. Small unit actions, finding the enemy, integrating

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C^3I/nuclear/chemical/electronic warfare, and dispersed forces become the battlefield problems of the future. Among the specific technologies that become important are those that will permit us to conduct sustained operations, to locate and track hostile forces continuously, to provide real-time information management, to counter hostile acquisition systems, to provide capabilities "transparent" to technical complexity, to ensure high equipment availability as well as reliability and to provide those equipments that can operate in extreme environments. In evaluating the opportunity-to-technology risk ratio as a criterion, we have identified a group of technologies that could, in our view, "make a difference."

We will be continuing our emphasis on current thrusts in directed energy and directed energy countermeasures, very high speed integrated circuits (VHSIC), the Ada language program, adverse weather precision guided munitions, advanced materials and chemical warfare. However, we believe that stronger effort is required in selecting additional technologies for management and funding emphasis. Among the disciplines we plan to review and consider for future emphasis are:

- Microelectronics (with emphasis on VHSIC), fail safe/fault tolerant electronics, and hardening against all types of radiation;
- Advanced software techniques including their development and support environments; machine intelligence, supercomputers, optical processing and communications; and microprocessor-based personal learning aids;
- Rapid solidification technology, advanced composite materials; and large space structures;
- Active and passive stealth for aircraft and structures; space nuclear power; space based radar; infrared arrays; high power microwaves; and short wavelength lasers.

To speed the introduction of these evolutionary technological opportunities into our military systems, we will apply the concept of Pre-Planned Product Improvement (P^3I). By this procedure we will insert advanced technology, which has been demonstrated as mature, into deployed systems through upgrades of those subsystems that offer the greatest overall benefits. The payoff is a reduced lead time to fielding technological advances while obtaining significant improvements in military capability over the service life of the system.

We are taking steps to improve coordination and planning of cross-Service technologies, reduce unnecessary redundancy, and to exploit more fully and rapidly the most promising developments. The erosion of our technology base is a national problem and we will continue to work the broader problem to ensure that the U.S. maintains a technological edge.

Last summer the Defense Science Board reviewed the Technology Base. In general, the report was supportive of our ongoing efforts. They suggested that the Services adopt "scenarios" to focus their technology efforts, and the following "catechism" to develop a well-founded investment strategy:

- What is it? What is this effort trying to accomplish (defining the technology sufficiently well to discriminate it from other similar technologies)?

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- o Why is it important? Assuming success, what difference can it make to the user or in a mission area context (taking into account the nature and limitation of current practice)?

- o What is the current status? What is the DoD program? What should it be? What is new about the proposed effort and why will this approach be successful?

- o How long will it take? How much will it cost? What are the measures of success?

Although these are fundamental questions, we feel that more attention to frank answers and to how the intervening efforts fit together is what oversight responsibility is all about.

The DSB study also was critical of the barriers to successful transition of technology into operational systems. The principal barriers were identified as:

- o Partitioning the research, development, and production process into separate organizations and contractors

- o Lack of involvement of potential users in the establishment of requirements and the resulting programs

- o Lack of fenced budgets to allow the product activities to fund transition of desired technologies

- o The failure to meet an "opportunity window" o The lack of a risk/reward system o Existence of mature hardware options

A strong recommendation was to require technology insertion plans as a basic and fundamental part of program planning. To a certain extent, our P^3I initiative will help satisfy this need, but we are also exploring other, more effective ways to improve the transition process.

The DSB performed two reviews of the contribution the universities can make to the DoD technology base. They found that the universities and DoD need each other. DoD needs the scientists and engineers trained by the universities; it needs the faculty pool of scientists and engineers working in the DoD area as originators of new ideas and as expert consultants and advisers. The university research base for defense preparedness is in considerable disrepair and therefore in need of upgrading in faculty, equipment, facilities and support. The problem is much broader than DoD, but DoD has a specific interest and responsibility and a critical need to see that a solution is found and that the salution is enduring.

Mechanisms are needed to stimulate both quality and quantity in the training of scientists and engineers in defense-related subjects, especially in the more advanced technologies, to encourage their employment in the universities and DoD procurement process.

We have responded to these findings by:

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- o Increasing the amount of research to be performed by the universities
- o Increasing science and engineering fellowships
- o Increasing funding to upgrade research equipment in universities

We have also instituted other initiatives to improve the responsiveness of the universities. We are seeking ways to encourage much closer cooperation between the industry and the universities through the industry's independent research and development (IR&D) program. In this way we hope not only to strengthen the universities, but also shorten the time required to get new technology out of the labs and into our systems.

The DSB also examined the in-house laboratory posture. To build on their review, and that of our own in-house Laboratory Management Task Force, Dr. DeLauer asked Dr. Robert Hermann, formerly an Assistant Secretary of the Air Force, to conduct an indepth review of the DoD Laboratories. Dr. Hermann submitted his report in March, and we will take on his group's findings and recommendations as a point of departure to restore the vitality and viability of the laboratories, which represent a most important resource: 60,000 workers, almost 30,000 of whom are scientists and engineers, plus physical resources worth in excess of $4 billion.

The study team found:

- o There is indeed a strong and continuing need for the DoD to maintain the laboratories and R&D centers.
- o Much good work is being done in the laboratories and technology created by the laboratories continues to make its way into the operating forces.
- o There exists a disconnect between the laboratories and the operating forces which exacerbates the problem of technology transition to the field.
- o Industry, the laboratories, and the user community all feel cheated by the existing process.
- o The time is ripe for improving the DoD/University R&D connection.
- o There are new technology opportunities and technology base operational functions which have evolved in recent years that require special DoD attention to realize the maximum benefit.
- o The technology environment surrounding the laboratories has dramatically changed in recent years, which requires that DoD and the Services reassess the laboratories' roles and missions.

We are now planning our course of action. We plan to use the Laboratory Management Task Force to implement most of our actions. Most importantly, with the support of the Congress, we have already achieved two important objectives: relief on the Determination and Findings ceiling and relief on the high grade personnel ratio. We are now attempting to evaluate the nature and severity of our manpower problems, and we are working closely with the Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs

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and Logistics to determine what can and should be done to revise and strengthen our laboratory personnel practices. We may have proposed legislation this fall.

Some of the more interesting recommendations of the Hermann Group are:

- o Establish an external advisory group for each laboratory
- o Establish an outside (of DoD) expert review process which would assess each laboratory's effectiveness every 3 to 5 years.
- o Couple laboratories to operational forces more effectively by assigning laboratory personnel to unified and specified Commands.
- o Establish a formal "logistics R&D program"

By next year we plan to present to you the specific actions necessary to protect and improve the DoD laboratories.

In the last year, we have also become more deeply concerned over the future supply of scientists and engineers. We rely on the universities almost exclusively for trained scientists and engineers at the bachelor and graduate levels. Although there are more students enrolled in engineering colleges than at any time in our history, the enrollment in graduate schools is down significantly, especially for U.S. students. In some universities and for some disciplines, almost half the graduate students are foreign nationals. In addition, there already exists a significant shortage in engineering faculty. Nationally, approximately ten percent of all engineering faculty positions are vacant with 200 vacancies in computer sciences alone.Taken together, these facts forecast an alarming lack of American engineers as faculty candidates in the future, threatening a serious change in the educational procdures for our future engineers. This problem is a critical one which feeds upon itself and about which we as a nation must take clear and decisive action. We now have several actions underway to address the need to increase the number of U.S. graduate students in engineering:

- o The Army, Navy and Air Force have all initiated fellowship programs and by FY 83 will be supporting more than 100 fellows in defense related disciplines. The Air Force fellowship program focuses on thermionic engineering, advanced composite structures and research in aircraft technology; the Army currently plans emphasis on computer sciences, vertical lift technology and advanced materials. The Navy will target its fellowship support to students in electrical engineering, computer sciences, naval architecture, applied physics, materials sciences and mechanical and aerospace engineering, and is implementing this program with the help of the American Society for Engineering Education.
- o Our basic research program also indirectly supports many graduate students. For example, a Navy study conducted in FY 1980 shows that the Office of Naval Research supports an estimated 2,000 graduate students (some partially) through its contract research programs. The number for all three services is probably close to 4,000 graduate students.

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- o The summer faculty program at our DoD labs provided summer research opportunities to more than 200 faculty members last year.

Below the baccalaureate level, we have initiated a science and engineering apprenticeship program for high school students. To date, several hundred promising high school students have worked in DoD laboratories or with university researchers under contract to DoD. The program provides students with exposure to research techniques under the guidance of a senior mentor and alerts these youngsters to the need to take the right math and science courses while still in high school in preparation for technical careers. Other actions that help improve the engineering problems are:

- o A new section of the recently passed Defense Authorization Act of 1982 will enable our R&D laboratories to contract with educational and nonprofit institutions for the research services of college and university students. Regulations to implement this program are currently being developed.

- o The Navy and the Air Force have stipulated that certain percentages of their ROTC scholarships must go to students enrolled in science or engineering fields of study. The Navy requires 80%, and the Air Force, 70%, of all scholarships to focus on these areas.

- o The Defense Communications Acency, in conjunction with the Armed Forces Communications and Electronics and Electronics Association, has developed a joint project titled the Partnership for the Development of National Engineering Resources. Designed to stimulate interest in science, engineering and technology among high school and college students, the Partnership seeks industry sponsorship of a number of efforts such as plant tours, work-study programs, scholarships, equipment donations and other activities that can expose young people to potential careers in science, engineering and technology.

III. SELECTED MAJOR FY 1983 TECHNICAL PROGRAMS

I will focus here on some of the technical programs in the S&T program which are of particular significance and illustrate the importance of the FY 1983 planned efforts.

A. Research

There is no doubt that the technological superiority upon which we depend for our security is being challenged as never before by our potential adversaries. And it is equally clear that our ability to meet this challenge will depend in large measure upon the maintenance of an imaginative, broadly-based program of basic research to provide a continuing flow of new concepts and technological options for the solution of current and future national defense problems.

Before proceeding to a description of the research directions to be emphasized in FY 1983, it is appropriate to note some of the accomplishments of the past year. The following examples are particularly noteworthy:

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- o New Armor Penetrator Technology for Anti-Tank Warfare. Far more lethal armor penetrator warheads for use against tanks and other armored vehicles will result from a new theoretical shaped-charge model for designing anti-armor munitions.

- o Improved Safety and Mission Effectiveness of Helicopters. A new nondestructive test method will locate previously undetectable helicopter rotor blade flaws which could, if undetected, lead to catastrophic failure.

- o Low Cost Missile Seekers. Research in computer technology has led to a very small and inexpensive missile seeker which can autonomously acquire a target, track it, and provide guidance signals.

- o New Submarine Detection Technology. Advances in optical sciences and electronics have led to development of a new kind of hydrophone based on optical fibers. The new hydrophone detector operates at low frequency with very low noise levels and very high sensitivity.

The Research Program in FY 83 will continue to cover a broad range of science and engineering topics which are of critical importance to the defense mission. The funding increase in FY 83 will be used to strengthen areas where additional support is urgently needed to overcome serious inadequacies in the current level of effort. These include the following:

- o Free Electron Laser (FEL). The FEL, which was first demonstrated at Stanford University in 1977 under an Air Force contract, has the potential for efficiently producing high-power, coherent radiation which in principle can be tuned from the millimeter to the x-ray region of the spectrum. It has already demonstrated a megawatt of pulsed power at 400 micrometer wavelength, and further progress is expected.

- o Sub-Microelectronics for Millimeter Generation. It is vital to understand the fundamental limitations of the operating ranges of electronic devices, both semiconductor and tube type. The extension of limiting parameters (such as frequency response, speed, power, sensitivity, dynamic range, and the like) is of immediate interest. Some exceptionally critical programs fall within this area, such as the entire field of near-millimeter wave (100 to 1000 GHz) sources and detectors, of which there is currently a severe lack, especially in the atmospheric transmission windows at 140 and 230 GHz. An important aspect of the electronics program is a new tri-Service 6.1 program on Ultra-small Electronics Research (USER).

  The advent of high-resolution electronic, x-ray, molecular, and ion beam lithographic techniques is pushing toward an era of ultra-small devices in which individual feature sizes might well be fabricated on the molecular scale, the goal being 0.02 micrometer resolution.

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- Computers and Information Processing. Topics of particular interest in information processing include computer architectures for efficient distributed processing, controls to improve memoryaccess techniques, reliable digital transmissions, software cost reduction, tecnhiques for more reliable software, Ada based programming environments, simplified operating systems, and improved methods for parallel processing, and artifical intelligence. An important effort has been established in artificial intelligence and robotics directed at developing "smart" computer systems with capabilities for common sense reasoning and physical dexterity normally attributed to humans. It includes fundamental research on machine representation of knowledge, language and speech understanding, computer vision, machine controlled manipulators, and reasoning by analogy and inference. Directly tied to the artifical intelligence project are efforts in robotics and industrial automation.

We intend to maintain the real growth of the research effort started last year, and have requested an increase in real terms from FY 82 to FY 83 of about eight percent. The importance of strengthening the research effort becomes apparent when we recognize that today's vital military capabilities, for example the evolving cruise missiles, stealth aircraft, and powerful new antitank weaponry, are derived from basic research done 10 to 20 years ago. The other side of the ledger also displays compelling evidence of the need for increased research, as shown by the Soviet superiority in new types of submarines, satellite killers and enhanced chemical warfare capabilities.

Management of the Research Program is the subject of continuing examination, and every effort is made to ensure the effectiveness of our investment. A management initiative which encouraged multi-disciplinary (cluster) programs as a means of addressing complex DoD problem areas has been substantially expanded to over 600 clusters, with 200 of these in universities. In addition, a special kind of cluster program, designated as Selected Research Opportnities, has been established by ONR to emphasize interaction between DoD sponsored university programs and related efforts in industrial and in-house laboratories. The Air Force has undertaken a similar approach through its Multi-Investigator Program.

Another management initiative we have recently undertaken addresses the growing shortage of scientists and engineers in fields critical to defense.We are concerned with the increasing difficulty of inducing able students to pursue graduate training and research in fields where the demand for specialists is greatest. The universities play a key role, yet graduate student enrollment in engineering has declined; only about one-half of the new Ph.D's in engineering received their first degree in the United States. The whole question of DoDuniversity relationships is of intense interest to both DoD and academia, and has been given high priority within DoD. A Defense Science Board Task Force has prepared a report for Congress on university responsiveness to DoD needs. Joint meetings of DoD personnel are frequently held with university representatives, professional societies, the National Science Foundation, industry

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groups, and others. Programmatic actions include a $30 million per year initiative starting in FY 83 to update and replace obsolete university instrumentation used in the pursuit of research for DoD. Starting in FY 83 the DoD will offer graduate fellowships in selected technologies of interest to the Department. We have a high school apprenticeship program to introduce high school students to technology by working in DoD laboratories. There is a program to bring university faculty to work in DoD laboratories and to consult on both technical and policy issues. An informal DoD/University Forum is now being set up to facilitate the exchange of views on a regular periodic basis between senior DoD and university people.

B. Directed Energy

The DoD Directed Energy Program, with elements in each of the Services and DARPA, continues to explore the feasibility of using high energy laser and particle beam technology in a variety of military mission applications, ranging from forward area combat weapons on the Army battlefield to strategic missions. Recent accomplishments include:

- Award of the military construction contract for the DoD High Energy Laser Systems Test Facility (HELSTF) at the White Sands Missile Range (WSMR), New Mexico. Construction was approximately 63% complete as of 31 December 1981.

- Continued operation and characterization of the Navy's Mid Infrared Advanced Chemical Laser (MIRACL), which demonstrated lasing performance with good beam quality in February 1981. Fabrication of the beam director and other equipment continues.

  These subsystems will be installed and integrated into a complete system WSMR for the conduct of the Navy's Sea Lite lethality demonstrations.

- The Army has embarked upon two new demonstrator programs, one for a forward area laser weapon and a second for a close combat laser weapon for use in the Army's forward area battlefield.The former has entered a competitive design phase and a contract for the latter was awarded in April 1982.

- Initial in-flight testing of the Airborne Laser Laboratory with the high power laser in operation and the beam directed against a target occurred in FY 1981. While system lethality against this target was not conclusively demonstrated, significant advances were made in target acquistion and tracking, and also in pointing a high power laser beam at a target under realistic airborne engagement conditions. Testing continues in fiscal year 1982. Initial facility activation and testing of the annular gain generator for the cylindrical chemical laser occurred in April 1981.

- The report to Congress on Space Laser Weapons was prepared and submitted in May 1981, with a recommendation that the program be augmented by $50 million per year. A detailed program plan

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is presently in development leading to a decision in the latter part of this decade on whether to proceed with an on-orbit demonstration prototype.

FY 1983 Service plans for the directed energy program include:

- Completion of construction of the High Energy Laser Systems Test Facility, and beginning of the movement and installation of the laser, beam director, and other equipment at White Sands Missile Range. This equipment will be assembled into a complete high energy laser lethality demonstrated system for generic surface based air defense with emphasis on anti-ship missile defense. While principally a Navy program, there will be significant Army and Air Force participation.

- Following completion of the preliminary design competition, the Army plans to select one contractor for a detailed design and fabrication of the Forward Area Laser Demonstrator (FALWD). Fabrication of the Roadrunner demonstrator of a Close Combat Laser Weapon (CCLAW) will continue.

- Air Force plans include continued work on a new fire control system which will permit multiple missile engagements by the Airborne Laser Laboratory, and on the annular resonator and the annular gain generator to demonstrate a deuterium fluoride cylindrical chemical laser.

- Air Force efforts in space-based laser weapon technology will continue to address system issues in surveillance and warning, command and control, launch vehicle requirements, and overall integration and operation of a complete space-based laser weapon system.

The report to Congress on Space Laser Weapons concluded that space-based laser weapons could offer significant military potential provided that they were survivable to enemy attack. However, there are areas of major uncertainty in our ability to predict with confidence the ultimate utility of space-based laser weapons. Substantial improvement in the state-of-the-art of many areas of technology is required. Depending upon the particular mission requirements, the earliest availability of space-based laser weapons could be fifteen years or more.

A decision on whether to commit to a system development, including an on-orbit feasibility demonstration, should not be made until the uncertainties in technology and ultimate utility are resolved. We will pursue an aggressive research program to reduce these uncertainties.

C. Very High Speed Integrated Circuits (VHSIC)

The objective of the VHSIC Program is to provide dramatic improvement in our capability for high speed, high throughput signal and data processing of the type desired for military systems in the mid-1980s and beyond. This program seeks to accelerate the development of new technology for integrated

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circuits (IC) and to closely tie the resultant products to high priority military systems requirements.

The program promises to impact virtually every electronic system by providing a capability for up to a 100 times increase in signal processing speed and throughput with increased reliability and at lower system cost. In particular, advances have been identified for real time high resolution synthetic aperture radar, anti-jam communications, acoustic detection of submarines, image processing for fire and forget missile targeting, and onboard general purpose computers.

Initial VHSIC contract award decisions were made in February 1980. The program will extend through FY 1986. The current average annual funding rate is about $50 million. The most recent funding projection for the total program is $314 million. The program is a fully coordinated effort, executed through the Military Departments with overall management direction from my office. The program will be carried out principally through industrial and university contracts. The program is structured to encourage innovation from the private sector.

To meet its goals, the program was divided into three consecutive phases (Phase 0, I, and II) and an additional effort termed supporting technology, which will run concurrent with the consecutive phases. Phase 0 which was completed in March 1981 was a concept definition effort. It included system and subsystem analysis, partitioning studies, optimal approaches to silicon chip design layout, computer aided device modeling and experimental fabrication, and testing of designs, layouts and processing techniques. It resulted in a definitive plan in the form of a proposal for Phase I by each of the nine contractors. Phase I is now underway with six contracts awarded for a total effort of $167 million. These cover all technologies of interest and will provide IC for the system needs of all three Services.

Phase I consists of two parts. Phase IA will result in the establishment of a pilot line production capability for VHSIC chips with 1.25 micrometer feature sizes. The components resulting from this effort will be incorporated into subsystem brassboards for systems identified by the three Military Departments. This technology insertion aspect is considered to be the key part of the program. Phase IB will consist of initial efforts to extend the state-of-theart of IC fabrication, design, architecture, software and test (DAST) to submicrometer feature sizes and associated higher gate densities.

Phase II will be similarly divided into two parts. It is planned to be initiated in April 1984. Phase IIA will provide system demonstrations of silicon chips designed to 1.25 micrometer rules. Phase IIB will attempt to extend the state-of-the-art of IC fabrication to submicrometer feature sizes to obtain higher rate densities and higher signal speeds. The end goal is to establish a pilot production capability to fabricate IC's with 0.5 micrometer feature sizes. Successful completion of Phase II will provide a significant new capability for military systems and, through technological fallout, aid the semiconductor industry in meeting worldwide competition.

The technology support phase runs in parallel throughout the program with periodic requests for proposals in areas where technology needs appear critical. Approximately thirty percent of VHSIC funding will be applied

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to this part of the program. To date, over 50 contract awards have been made under this part of the VHSIC Program.

In response to the Report of the Joint Congressional Conference on the DoD Authorization Bill, a VHSIC program office has been established under my cognizance to provide overall management of the VHSIC Program. A management plan was structured to:

- Couple DARPA and DNA programs with VHSIC efforts.
- Foster coordination with the intelligence communities in order to track U.S. technology implementation as well as technology lead over potential adversaries.

In order to control the export of developed technology, the program, where appropriate, will be placed under the International Traffic in Arms Regulations (ITAR). My program office has generated export control guidance that addresses three basic elements for export control; namely, the VHSIC devices themselves, the manufacturing or process equipment to make them, and the technical data for their design, manufacture or use. In general, the application of the ITAR and of existing Export Administration Regulations will be used to control these elements as appropriate. We are continuing to review these procedures to ensure their overall effectiveness.

In order to encourage rapid diffusion of VHSIC technology throughout the U.S. semiconductor industry, second sourcing clauses are part of the Phase I contracts. Similar clauses will be part of Phase II. These will require contractors to enter into licensing arrangements for the parts of their VHSIC manufacturing system (including software) developed under this program.

The National Materials Advisory Board has completed a study that will determine the specific impact(s) of the VHSIC Program on the general U.S. industry resource base. It is believe that the semiconductor industry spends approximately 10 percent of its annual sales on R&D ($300 million), and since the VHSIC Program averages about 15 percent of this amount ($50 million), industry can redirect ongoing R&D efforts to focus on VHSIC program goals with minimal interference to commercial development.

D. Embedded Computer Software Technology

Computers are utilized in virtually all military systems and computer soft ware is becoming a critical element of those systems. It is essential to carry out the functions of command and control, navigation, surveillance, target acquisition and missile guidance. It also provides the framework for signal and image processing required for automating target acquisition, identification, and fire control. There is concern in military and commercial quarters with the present status of software development, where productivity measured in lines of code per programmer per day has not improved significantly over the years. By contrast startling advances in hardware technology during the past decade have led to large cost reductions per unit computation. This situation highlights the relative primitiveness of software technology. Development of software is more often described as an art than a science. The struggle to mature this technology to a disciplined engineering science has been painfully slow.

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Although it is widely understood that software is a critical component of our systems and that the state of the art of this technology is a weak link in our technology base, there is no simple formulation of the problem. Software development and management have traditionally been human intensive activities with many dimensions. In recent years we have addressed this problem with modest efforts such as high order language standardization and common instruction architectures. Two years ago we began planning a major thrust called the software technology initiative and are continuing our efforts to develop a coordinated and consolidated tri-Service technical and management plan to systematically address this important program area.

The creation of the common high order programming language Ada, has established a baseline for transfer of evolving software technology. We are preparing for the application of this technology by continuing not only the development of Ada compilers, but a set of related software support tools and standards to reap the potential benefits. This set of tools is known as the Ada Program Support Environment (APSE). The Ada Program is an important example of tri-Service cooperation. Direction of the Ada Program and APSE efforts has been consolidated under the recently chartered Ada Joint Program Office (AJPO). Starting in FY 82 the AJPO was funded as a single program element under the Air Force budget.

Just as the software challenge is multi-dimensional so must our R&D strategy be multi-faceted. It is our intent to pursue not only better automated tools for programmers, but also aids for the designers, development managers and maintenance personnel.

Our objective is to achieve higher quality software products and improvement in software productivity. The entire life cycle of software will be addressed. Software maintenance which includes the correction of latent errors and evolutionary upgrades has been estimated to be in the range of four to five times the initial development cost. The time and cost to correct one bad line of code which enters the operational phase undetected, is equivalent to that of writing on the order of 200 lines of code during initial development. We will pursue innovation in management techniques as well as in maintenance. Emphasis will be on automated methods and human engineering to make the programmer's environment "user friendly." The proposed program will includes adaptation of newly available low cost personal computers for use as intelligent terminals equipped with a library of software packages, better management methodology including estimation and measurement techniques.

E. Chemical Warfare

To meet the chemical warfare threat posed by the Soviet and Warsaw Pact forces, the DoD has initiated an aggressive research and development program which, combined with increased procurement, promises a greatly improved chemical warfare and defense posture in the near term.

The 1980 Defense Science Board recommendation to expand the science and technology base has been implemented. Substantial funding increases have been made, particularly in the area of research. There has been especially good university response in the area of medical prophylaxis and therapy. The other principal research emphasis is being placed on detection and warning, decontamination, and materials.

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We have expanded the technology base program to develop new materials for protective garments and masks as well as to improve prophylaxis and therapy and develop an integrated doctrine for combat casualty care in a contaminated environment. Programs will continue in the areas of chemical, thermal, and radioactive decontamination as well as mechanical removal, charcoal regeneration and residual life monitors to increase useful life of filters and charcoal-bearing protection materials. New efforts on detection and alarm systems using potential techniques such as mass spectrometry, laser, microwave, ion mobility spectrometry and piezoelectric crystals will reduce the logistics burden and increase the sensitivity and specificity of detection.

In other development programs, remote sensing alarms, automatic liquid agent detectors, training simulators and devices, decontamination systems, and similified collective protection programs are in progress. Development will continue on vehicle hybrid collective protection systems, a lightweight decontamination system, and the jet exhaust decontamination system. All of these systems will reduce personnel incapacitation, and be a major factor in sustaining military operations on a contaminated battlefield.

F. Advanced Aircraft Technology

Our aircraft technology program continues to focus on those technologies which will:

- o Reduce aircraft acquisition and support costs
- o Develop new and more effective operational capabilities
- o Increase vehicle survivability

We are also concerned with the problem of transferring advanced technology into new aircraft systems. The long lead times required to consider technology mature enough for application with acceptable risk (up to fifteen years in some cases) and the infrequent development of new aircraft systems, are major impediments to technology transition. In order to accelerate this transition, we are focusing on full scale flight demonstrations as they emerge, which will foster user/technologist interaction, insure technology maturity and lead to ultimate acceptence by the user. Secondly, we are developing technologies which can be applied to existing systems on a retrofit basis.

In our FY 1983 program, major areas which reflect the approach outlined above, include: (1) the Advanced Fighter Technology Intergration (AFTI) Program, (2) a nonmetallic composite helicopter fuselage, and (3) a new initiative to develop Short Take-Off and Landing (STOL) capability for fighter aircraft.

The Air Force AFTI program will provide significant improvements in fighter aircraft combat capability through the integration of advanced control concepts with mission avionics systems. The advanced concepts include the capability to independently control aircraft translational and rotational degrees of freedom, resulting in unique maneuvering capabilities. This will result in improved weapon line-of-fire control, expanded launch envelope, reduced weapon fire control time and increased

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maneuvering during weapon delivery. The anticipated benefits to future tactical aircraft include a 3 to 1 increase in air-to-air gunnery hits, an improved missile exchange ratio and a 2 to 1 improvement in air-to-surface weapon delivery accuracy is anticipated.

Over the past several years, we have demonstrated the cost and performance advantages of using nonmetallic composite materials in helicopter rotor blades. Now the Army has initiated the Advanced Composite Airframe Program (ACAP) to demonstrate that composite materials technology can be applied to primary rotor craft structures to gain significant system improvements including reduced maintenance, improved survivability, reduced weight and cost, increased ballistic damage tolerance, reduced radar cross-section, improved crash worthiness and easier repair of battle damage. The near term goals of this program are to demonstrate a 22 percent reduction in cost and a 24 percent reduction in system weight compared to a baseline metal airframe. The preliminary design phase of ACAP has been completed and the first flight is scheduled for early FY 1985.

G. Aircraft Propulsion Technology

Our technology base program in aircraft propulsion technology is guided by two important facts: (1) rather modest increases in aircraft propulsion system performance have high payoffs in terms of the range/speed /payload/ size/cost characteristics of air vehicles, and (2) the time required for aircraft propulsion system development is historically much longer than the time required for airframe development. Accordingly, our goals are, in priority order: to improve performance; reduce development risk and costs; reduce maintenance costs; and reduce acquisition costs of aircraft propulsion systems. To achieve these goals we maintain: (1) an aggressive exploratory development (6.2) program, supplemented by contractor IR&D efforts, to develop advanced components; and (2) a significant advanced technology demonstration (6.3A) program in which total propulsion system improvements can be demonstrated, development risks reduced, and our knowledge of component behavior in a system environment can be increased.

This approach has proven to be productive, as illustrated not only by the significant improvements made in aircraft propulsion systems over the last twenty years but also by more recent accomplishments as well. For example, we have recently demonstrated a 20% reduction in specific fuel consumption, a 25% to 35% increase in specific horsepower, and a 50% reduction in vulnerable areas in two competitive 800-hp turboshaft engine demonstrators for helicopter applications. These configurations have also demonstrated sufficient durability such that full-scale development can be undertaken with confidence. Another recent demonstration has been a 15% increase in thrust/weight ratio, a 15% reduction in fuel consumption, and a 24% reduction in the number of parts in a large fighter engine technology demonstrator.

In FY 83 we plan to initiate a turboshaft engine technology demonstrator in the 5000 hp class with the objective of reducing the specific fuel consumption by approximately 30%. We also expect that performance improvements similar to those cited above will be demonstrated in at least one other competitive large fighter engine technology demonstrator, and that the necessary durability will be demonstrated in two of these configurations.

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H. Materials and Structures

In the past our Materials and Structures Program has emphasized cost reduction and performance improvement. In FY 1983, with our growing dependence of foreign sources for raw materials, greater emphasis will be placed on substitution and conservation. This effort is aligned with the Administration's policy of recognizing materials R&D as a viable option toward alleviating possible strategic and critical materials availability problems. Emphasis will be placed on technologies to achieve more independence in the area of strategic materials including metal-matrix composites (MMCs) and rapid solidification technology (RST). These basic starting materials are predominantly obtainable from domestic or secure Free World sources.

The coordinated Navy and Air Force program in erosion resistant carbon/carbon (C/C) composite materials, directed toward improving the survivability and accuracy of advanced reentry vehicles under adverse atmospheric conditions caused increase in erosion resistance and is proceeding towards even greater reentry vehicle accuracy options. Equally important, the focused funding and technological efforts have provided the impetus to rapidly transfer and apply C/C technology to rocket motor applications. C/C composite technology has emerged as the selected nozzle design for all stages of the Air Force MX missile, the Space Shuttle Inertial Upper Stage and possibly for the advanced Trident missile system.

The technological base that the DoD has built in the area of C/C composites is being further exploited by the gas turbine community. The viability of these composite materials for application to the hot sections of gas turbines is being investigated by the Navy and Air Force. In addition to the performance gains that can be accrued because of the high temperature capabilities of C/C composites, their domestic availability and potential low cost make them attractive alternates to the high cost gas turbine superalloys. These superalloys contain appreciable amounts of cobalt and chromium, for which the U.S. is almost totally dependent on imports, hence the successful development of C/C for this application would contribute towards relieving U.S. dependency on foreign sources.

The tri-Service/DARPA thrust program for the development and application of metal-matrix composite (MMC) materials for a variety of military applications is proceeding as planned. A number of contractural and in-house efforts have been initiated in the areas of:

- Helicopter transmission housings and portable bridging components (Army)
- Structures for strategic missiles, mines and torpedoes, and tactical missiles (Navy)
- Airframe and gas turbine components (Air Force)
- Satellite components (DARPA)

In addition to these applications, MMC materials appear to show promise for an ever widening range of applications such as laser mirrors, lightweight gun mounts, submarine propellers, antennae, and others. One of the early results emerging from this program is the development of

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reinforced lead grid materials for submarine batteries. If this development proceeds successful, it can result in lengthening the submarine battery replacement cycle by a factor of two, thereby aligning it with the nuclear core replacement schedule and reducing maintenance costs appreciably.

Another significant outcome of our work in the MMC program is the potential for substitution of MMC for critical or long leadtime materials such as chromium, cobalt, titanium, and beryllium. As an example, it has been determined that high modulus graphite fiber-reinforced magnesium alloy composites exhibit stiffness, strength and dimensional stability properties equivalent to or superior to those of beryllium at the same weight. This can result in cost savings up to 90-percent for some components now fabricated of beryllium.

Our tri-Service/DARPA RST program to produce very high quality starting materials for new families of aluminum and titanium alloys as well as superalloys is beginning to show the potential for dramatic increases in aircraft performance. As examples:

- o Aluminum, molybdenum, and tungsten were alloyed into nickel to obtain a 200°F improvement in heat resistance over current jet engine superalloys. The payoff is an engine which can produce higher thrust or greater fuel efficiency than any of today's turbomachines.

- o Lithium was alloyed into aluminum to obtain a 30% increase in specific modulus of elasticity and a 100 time improvement in life under cyclic stress conditions over presently available aluminum materials. The payoff is an airframe which weighs 30% less.

- o Iron was alloyed with aluminum, titanium and boron to obtain a 20% weight reduction and a 200°F improvement in heat resistance over current ferritic stainless steels. The payoff is a chromium free stainless steel for use in critical jet engine components.

The investment we have so far made demonstrates sufficient promise and maturity of this technology to justify continuing a long term financial commitment by the DoD to accelerate the development of these new materials. This technology has, moreover, demonstrated the potential for producing superior superalloys with only minor amounts of critical or scarce materials.

I. Underseas Warfare Weaponry Technology

The Undersea Warfare Weaponry Technology program is directed toward providing new technology options for future undersea mines and torpedoes. Based on a rapidly advancing Soviet threat a major thrust has been directed toward significantly improved torpedo performance. The basic technologies involved in this thrust are:

- o Guidance and control - advance acoustic homing technology.

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- o Laminar flow technology - obtain major drag reductions which will allow torpedoes to run quietly and faster with longer endurance.

- o Closed cycle propulsion - to allow torpedoes to run at high speed regardless of depth.

We have made major advances in these technical areas. The accomplishments and plans which are the most significant are:

- o Lithium battery technology - a major breakthrough has occurred in the development of high drain rate lithium batteries which may make them safe for submerged vehicles. This is a leading candidate for product improvement of the advanced Lightweight Torpedo now in system development. It appears that even higher power batteries are feasible which can be used to propel the next generation heavyweight torpedo.

- o Laminar flow technology - the three areas of investigation are heated boundary layer, suction, and polymer ejection. Major drag reductions have already been demonstrated in the laboratory and plans are to conduct at sea experiments in FY 1983.

Undersea warfare weaponry is truly an emerging technology which requires significant Navy, DoD, and Congressional support. It represents a credible means to counter the increasing Soviet submarine threat.

J. Electro-Magnetic Propulsion

A new class of hyperveolcity gun system utilizing electro-magnetic energy in lieu of chemical energy as the propellant is being developed. This will provide significantly increased target engagement capabilities for all military applications, with particular application to air defense, ballistic missile defense, and anti-armor weaponry.

- o A laboratory electro-magnetic rail gun launcher has been designed and fabricated at the Westinghouse R&D Center. All components have been tested and a device is being assembled for full scale testing. The gun will accelerate a .3 kg projectile to velocities of 3 km/sec.

- o A revolutionary compact power source (homopolar generator) has been designed capable of storing 6.2 megajoules. Component fabrication is completed and the power source will be tested during the 3rd quarter FY 82. The generator weights 3400 lbs, is 29" in diameter and 18" deep.

- o Small projectiles (a few grams) have been accelerated to approximately 10 km/sec.

In FY 83 the rail gun and homopolar generator will be married for testing. Testing with the flux-compression guns will continue with increased masses.

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K. Training and Personnel System Research (TPST)

Manpower is continuing to cost the Department of Defense about half of its annual budget. Militarily, we are outnumbered by our potential adversaries. We have sought to counter this superiority with quality primarily in advanced military systems. However, we must operate and maintain these systems with available manpower whose performance accounts for much of the effectiveness of military systems.

To meet this challenge, the Defense Department invests a lot for training. On an average day in FY 1982, about 200,000 active duty personnel and some 36,000 reservists will be undergoing some type of formal training. The cost of this effort will exceed $10 billion for people and $2 billion for equipment.

There is no reason to believe that these costs will diminish. The supply of eligibles will decrease over the next decade while the demand will not.For example, the airlines predict that over the next five years, more than 50 percent of their maintenance personnel will be retiring. The Air Force is looking at how they will handle the potential drain on maintenance personnel as these retirements take place.

It is the responsibility of our Training and Personnel Systems Research and Technology effort to meet the long and short term training and human factors needs. The 1981 Defense Science Board Summer Study focused on the issue of training and the readiness of our personnel. It noted that available technologies represented by microcomputers, educational aids, video discs, electronic games and the like could serve as "personal learning aids" to: (a) compress training time by up to 30 percent; (b) help our personnel obtain greater levels of skill, with more flexible training curriculum; (c) reduce the need for many instructors; and (d) provide "on the job" aids for the retention of skills. In conclusion the summer study recommended that we start priority programs on man-machine design in order to improve job performance. We are asking the Services to pay closer attention to personnel and training implications and to place increased emphasis on the use of microprocessor based learning aids and devices. In addition, we have asked the Services to survey their technology developments and needs and to advise us which projects could become tri-Service funded. In FY 1982, we have identified and are funding four such projects: (1) manpower and training research information system; (2) personnel electronic aids for maintenance; (3) computer-aided testing modifications for Armed Services Vocational Aptitude Battery development; and (4) computer-based instructional systems for the classroom.

L. Medical and Life Sciences

The Medical and Life Sciences Program is directed principally at solving "people" problems which may have an adverse impact on military operations and military systems. Major goals of the program are: to prevent militarily-important disease and injury; to improve the care of the combat casualty; to maintain and enhance human combat effectiveness and performance of individuals and man-machine systems; and to enhance human safety in military systems.

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The medical R&D consolidation study conducted in fiscal year 1981 at Congress' request, recommended formation of an Armed Services Biomedical Research Evaluation and Management (ASBREM) committee to coordinate and integrate Defense medical research efforts. The ASBREM is now functional and has designated several coordinating groups, each of which is concerned with a specific technical area of the program.

In response to FY 1982 guidance from Congress, we have designated the Army as lead Service for infectious disease and combat dental research and development and have directed the Army and Navy to begin to integrate their respective research programs in these areas. The Army is currently preparing a plan to insure maintenance of the Navy identity and participation in these research efforts. The Navy is to conduct research on dental disease and noncombat dental emergencies on behalf of all DoD components. Appropriate adjustments to support these decisions have been included in the FY 1983 budget.

We have also requested that the Services begin planning for program consolidation in the area of combat casualty care research, using the lead agency concept. We anticipate that the results of this latter effort will be reflected in next year's budget submission.

The DoD drug and vaccine development effort, for which the Army has been primarily responsible, has recently produced a number of preventive agents of military importance: meningitis vaccine; adenovirus vaccine; and a new antimalaria drug mefloquine. This program will require increased support for the foreseeable future as it addresses drugs and vaccines needed for projected operations in areas of the world where disease is a major military obstacle.

A significant part of our medical R&D effort is associated with medical defense against chemical agents, a topic addressed separately.

M. Undersea Target Surveillance

The Undersea Target Surveillance Program investigates the relevance and technical feasibility of potential solutions to Navy operational needs in undersea surveillance. The primary undersea targets sought are the submarine whose torpedoes, cruise missiles or ballistic missiles threaten U.S. submarine, surface ships and territory. Targets are dealt with on a global basis which includes surveillance of large ocean areas, choke points, areas around theaters of activity and designated areas of special interest. The platforms from which surveillance is performed are land-based facilities, submarines, surface ships and airplanes. Most of the surveillance sensors under investigation are acoustic, relying on radiated acoustic noise and active acoustic (sonar) signal returns from the targets. Other sensors under consideration are optic, electromagnetic, and magnetic to complement the more mature acoustic sensors. Sensors are deployed singly or in arrays, where the geometry and spatial extent provide signal gain. All of the sensor information, acoustic and nonacoustic, is processed by computers using sophisticated data processing algorithms to detect, localize, classify, and track the target. There is an increased emphasis in the program on detection of acoustically quieter targets in noisier environments.

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Land-based surveillance systems are being considered which receive and process information from fixed undersea sensors or sensor arrays via cables and from drifting undersea sensor arrays via data relays. The overall objective of this work is to exploit new technological advances in signal and data processing in order to lower detection thresholds, extend the range of parameters of the signals used for detection, reduce false alarm rates, more accurately identify and localize targets, and ease operator burden. New processor component and architecture technology is being investigated to achieve the dramatic increases in processing throughput needed to meet future surveillance requirements. Algorithms and processes are developed in laboratory settings and evaluated using both simulated and real-world recorded data sets. Interarray processors, improved displays, data base management algorithms, optical processors and information extraction from previously neglected signals have recently been demonstrated in the program.

Expendable acoustic sensors and small aperture sensor arrays deployed in sonobuoys are the vital elements in the Navy airborne ASW systems. Passive and active sonobuoys are being consistently updated to improve capability, reduce cost and counter threat advances. Airborne magnetic and optical detection systems are also being investigated to complement the acoustical systems. The detection and frequency range of passive sonobuoys is being extended and the performance of a high gain extended life deployed horizontal line array is being investigated. Methods are being developed to improve the capability of airborne active sonobuoy systems by reducing reverberation and optimizing design parameters against the future threat. Substantial progress has been made in developing these nonacoustic sensors and they will be flight tested in varying environments to define their operational performance potential.

N. Electronic Warfare

The electronic warfare (EW) technology program covers a broad spectrum of activities in the functional areas of detection, warning and location, jamming and deception, signal reduction and obscuration, countercountermeasures, and exploitation and simulation. The technology base investment in EW totals $122 million in FY 1983, with about 50% of the effort concentrated on jamming and deception. This is primarily due to the deficiencies in our current capability in jamming and deception and the potential utility of this technology as a force multiplier if properly conceived and implemented. The counter-countermeasures area is experiencing real growth in response to the magnitude and sophistication of the projected threat.

The technology thrusts in the area of detection and location include improved receivers to operate at higher frequencies with larger bandwidths utilizing advanced signal processing for analyzing and matching signals. The jamming and deception initiatives include software programmable jammers operating at higher frequencies with lower cost, reduced size, threat sorting and prioritization capability. The signal reduction area includes visibility reduction of aircraft, improved smoke, obscurants and chaff. The countercountermeasure areas include low probability of intercept, spread spectrum, frequency diversity, adaptive antenna nulling and signal analysis and processing. The exploitation and simulation areas include the analyses of vulnerability of hostile systems to countermeasures equipment and techniques.

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Recent accomplishments in the warning area of the electronic warfare program include the following:

- Acousto-optic (AO) technology is being utilized to achieve significant improvements in electronic warfare support measures (ESM) passive detection. The AO technology provides the capability for instantaneous channeling of received signals in both frequency and direction of arrival with wide bandwidth and high resolution. Such threat warning is essential in a dense signal environment, to allow ECM procedures to be activated. Cost reduction is expected by the use of monolithic integrated optics.

- Development of a laser warning receiver to provide the pilot of an aircraft with sufficient warning of an impending laser threat for evasive action or countermeasures. The laser warning receiver is designed to interface with existing microwave radar warning receivers.

- A dual mode warning system for detection of surface-to-air IR guided missiles, capable of operating in a high false alarm rate environment. The system provides redundancy through the independent use of either sensor in case of a failure.

The proliferation and increased effectiveness of hostile electro-optic (EO) based weapon systems such as optical trackers, night vision equipment and EO augmented weapons has caused an increase in emphasis on EO technology. In particular, there has been a rapid growth in countermeasures (CM) to EO weapon systems. Other trends include multispectral warning systems utilizing ultraviolet, infrared and lasers, and increased emphasis on low observables as a countermeasure to both RF and EO weapon systems. The limiting factors to EO countermeasures include: (1) the lack of intelligence information on specific characteristics of known threats; (2) costs, performance and reliability issues which depend on the size and complexity of the CM systems; (3) tracking and stabilization requirements, target locations and handoff methods; and (4) the potential employment of counter-CM techniques.

There are a number of technological challenges with significant impact on electronic warfare in the 1980's. Current EW jammer capability is penalized in many cases by the limitations of power amplifiers. We need high power microwave amplifiers, more efficient tubes with greater bandwidths, broadband high power lasers and millimeter components, broadband phased arrays utilizing these components and adaptive optical decoys. We will continue to work on these challenges.

O. Adverse Weather Precision Guided Munitions

To offset the large numbers of Warsaw Pact weapons facing NATO forces, a major DoD thrust has been identified in precision guided munitions (PGMs). The objective of this PGM thrust is to develop a force multiplier effect by reducing vulnerability of the PGM launcher and crew, increasing kill probability per engagement, extending the range of target engagements, and providing a multiple kill probability by delivering a large number or

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terminally guided submunitions into the target area via a single delivery vehicle. In the past three years the PGM thrust was further expanded to develop a capability to engage targets in a realistic battlefield environment which includes adverse weather conditions.

This adverse weather PGM thrust requires significant technology advances in the following:

- Launcher technology - develop a means to separate the launcher and the crew so that the crew location is not compromised when a PGM is fired.
- Mid-course guidance technology - provide more cost effective and highly accurate delivery of PGMs at longer ranges through development of lower cost inertial components and utilization of correlation update techniques.
- Terminal guidance technology - develop an autonomous terminal homing capability utilizing advanced signal processing techniques at frequencies that have good transmission properties in battlefield aerosols, dust, fog, rain and snow.

Recent technology accomplishments have shown the PGM thrust to be a feasible goal.

- We have been able to develop advanced signal processing algorithms which enable a terminal homing seeker to select the target of interest in a cluttered background environment and home on that target.
- A highly accurate inertial guidance system using the ring laser gyro has been developed and demonstrated, which provides good mid-course guidance capability at a fraction of the costs previously projected.
- The DARPA/Army Assault Breaker Program has demonstrated a capability to deliver and dispense a large number of terminally guided submunitions into an armored target formation using a single delivery vehicle.

Some FY 1983 plans to demonstrate new technology supporting the PGM thrusts are:

- The Air Force/Navy adverse weather seeker program will demonstrate both synthetic aperture radar and millimeter wave seekers against a high value target spectrum including major naval combatants, bridge, railheads, etc. This program is the first DoD attempt to identify, classify and attack targets other than armor.
- The Air Force/Army infrared seeker demonstration program will utilize advanced focal plane array and signal processing technology to advance the state-of-the-art of imaging infrared terminal homing to increase the hit-to-kill probability of anti-armor munitions.

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- The Air Force mid-course guidance demonstration program will demonstrate a modular missile utilizing digital information distributed throughout the missile airframe.

IV. SUPPORTING PROGRAMS

A. Global Weather Support

Weather support (meteorological, oceanographic, etc.), properly structured can be a powerful force multiplier, i.e. a technology which can substantially multiply the effectiveness of our forces. It is a key ingredient to all phases of the life cycle of a weapons system. Proper consideration in the concept and development phases includes designing around adverse weather effects or developing techniques for mitigation of unfavorable weather. Weather must be adequately considered during the critical test and evaluation stage to properly validate system performance in realistic military situations. Weather support is critical in planning to ensure realistic expectations of performance. Finally, the battlefield commander requires timely, accurate weather support to employ his forces economically and effectively.

We have made considerable progress in understanding the effects of the natural and man-made obscurants upon our infrared and optically guided weapons, but much still needs to be done. At the present time we are conducting a major joint Service field experiment which is establishing the technology base for understanding the effects of snow on these modern weapons. We have already established that falling snow can have a major impact on the employment of the laser, infrared and EO systems and we are now defining the significant elements needed for the critical weapon selection decision to be made by the battlefield commander. History shows us that winter has served as an effective ally of Russia in every major war in which they have been involved in the last 300 years and we are now working to understand winter conditions better and to take advantage of them.

A major focus of our weather program is on the techniques and equipment needed to convert normal weather data into direct tactical and strategic weapon system parameters and to deliver that information directly to the battlefield commander. All Services have major programs directed toward this important goal. Following the recently implemented shipboard refractive index prediction technique to provide key radar defense data, the Navy will be testing several new operational techniques to provide the ship commander with tailored weather information for the use of electro-optical weapon systems in shipboard defense. The shipboard Tactical Environmental Support System will tie together all the data sources and techniques to provide the ship commander with the complete picture needed for his tactical offensive and defensive operations. The Air Force is developing the critical techniques and equipment needed to obtain crucial weather information direct from behind the enemy lines for immediate receipt and direct application by the battlefield commander. The Air Force is also developing an Automated Weather Distribution System to modernize our 1950's weather station technology to provide rapid and accurate distribution of weather information to users both in the CONUS and overseas. The Army is in the final engineering development of the meteorological sounding system to replace the 1949 era equipment currently used to provide the critical crosswind data in support of our field artillery.

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The equipment for supporting our CONUS bases has much in common with that required to support the weather facilities of the National Oceanic and Atmospheric Administration (NOAA) and the Federal Aviation Administration (FAA). We are currently participating in a Joint Systems Program Office for the development and acquisition of a new, advanced Doppler weather radar system, the Next Generation Weather Radar, which will replace the aging weather radars of all three organizations. This common radar will permit significant economies in training and logistics in addition to providing a significant and immediate enhancement to our ability to detect, track, and predict the severe storms which threaten our high value resources. We are also exploring a similar joint arrangement for the development and acquisition of automated observing systems which could have significant implications for future manpower and basing structures.

In summary, we are committed to a vigorous weather support structure within DoD which takes full advantage of the civil programs and which is responsive to the entire spectrum of needs -- from that of the system designer through that of the battle area commander, on land or at sea.

B. Independent Research and Development (IR&D)

Independent Research and Development (IR&D) is a term devised to differentiate between a contractor's research and development technical effort performed under a contract or other agreement, and that which is independently conceived by a company to maintain its technological position. The IR&D designation includes the full spectrum of effort from research through product development and also encompasses system and concept formulation efforts. In simple terms, IR&D is a method of teaming DoD with the American industrial sector to promote research and development of value to national defense.

The Defense IR&D program continues to be a major contributor to our technological strength by bringing the innovative capacity of U.S. industry to bear on defense problems at relatively low cost. The IR&D effort is structured by the companies themselves to advance their technologies in ways they feel will enhance their competitiveness and efficiency in developing high-technology products.

By supporting the IR&D effort of industry, through the reimbursement of about one-third of contractors' total IR&D expenses, DoD realizes the use of of industry's IR&D. The net effect, of course, is that the amount of R&D performed which is of available to DoD is considerably greater than that which DoD obtains solely through its technology base appropriations.

D. International S&T Cooperation

Consistent with our objective of cooperating with our Allies, we are continuing our close S&T international relationship through two major programs. These are the NATO Defense Research Group (DRG) and The Technical Cooperation Program (TTCP). I am the U.S. Principal on these programs, and it is my intention to develop initiatives within the participating countries which promote strong S&T information exchanges and collaborative endeavors leading to a stronger and more viable technology base for the Alliance as a whole.

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V. CONCLUDING REMARKS

The total FY 1983 budget request including both the Services and Defense Agencies, is $4.3 billion. I consider it important that we maintain superior science and technology to serve as a source of our future systems and as a hedge against adverse technological surprise. I am confident that the funding requested in FY 1983 will be adequate to ensure achievement of our objective of maintaining a level of technological supremacy needed by the country to develop and maintain the military capabilities required for national security. We will be able to maintain a healthy and vigorous technology infrastructure which will enable us to continue steady evolutionary growth in military technology, to recognize and exploit revolutionary technical advances and to evaluate Soviet progress and advances in a rational and realistic fashion.

The growth will be directed among the Government, university and industrial laboratories. This combination of talent is still without parallel in the world, and adequate funding is essential in order for the U.S. to exploit its most important asset in the age of high technology military forces.

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H. MARK GROVE

ASSISTANT DEPUTY UNDER SECRETARY OF DEFENSE
(RESEARCH AND ADVANCED TECHNOLOGY)

Mr. Grove was appointed to this position on April 5, 1982. He is the principal advisor to the Deputy Under Secretary relative to the Department of Defense Science and Technology program which includes all basic research, exploratory development and non-systems-oriented advanced development (6.1, 6.2 and 6.3A programs, respectively). He also serves as Special Assistant to the Under Secretary of Defense for Research and Engineering, with principal responsibility for development and oversight of DoD policy for acquisition, utilization and management of computers in defense systems.

Mr. Grove received the E.E. degree from the University of Cincinnati in 1956 and the M.Sc. from The Ohio State University in 1964. He is a Fellow of the American Association for the Advancement of Science and is listed in "Who's Who in Engineering." He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), and a member of the IEEE Congressional Fellows Selection Committee which he chaired in 1981. He is a Registered Professional Engineer in the State of Ohio and is a member of Tau Beta Pi, Eta kappa Nu and Sigma Xi.

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Earlier positions held in the Office of the Secretary of Defense include: Director, Embedded Computer Resources, Office of the Deputy Under Secretary of Defense, Acquisition Management, where he managed computer acquisition policy; provided oversight of the Ada Joint Program Office; directed the DoD Reliability and Maintainability and Metric Conversion Programs. He served as Deputy Director, Standardization and Support, with responsibility for the DoD standardization program, the quality program, and standardization/acquisition alternatives including commercial products policy.

From May 1975 to January 1979, he was Assistant Chief, Systems Avionics Division, U.S. Air Force Avionics Laboratory, where he managed exploratory and advanced development for avionics software, airborne computers, protected communications and systems concepts and implementations. From 1970 through 1974, he was Chief, Department of Microwave Research, Walter Reed Army Institute of Research, where he developed and directed a national program in microwave bioeffects.

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DR. O. CHARLES WILLIAMS, JR.
DEPUTY FOR ADVANCED TECHNOLOGY
OFFICE OF THE ASSISTANT SECRETARY
(RESEARCH, DEVELOPMENT AND LOGISTICS)

Mr. Chairman and Members of the Committee:

I. INTRODUCTION

I am grateful for the opportunity to testify in support of the Air Force FY 1983 Technology Base Program. I'm sure we all appreciate the importance and contribution of a sound technology base. It is the infrastructure for evolutionary and revolutionary growth of military capabilities. It develops and maintains the skills and facilities required for sustained military technological superiority, prevents technological surprise, matures technology for transition to system development and provides direct system support for operational and in-development systems.

Many revolutionary improvements we have today in military systems capability come from defense research and technology. Two significant examples that have benefited both military and civilian capabilities are lasers and solid state devices. Their application in precision guided weapons is an excellent example. The startling inventions of the '60's in molecular electronics and optics were built on research 10-15 years earlier, and from this was born the integrated circuit industry which we take for granted today. The laboratories are also the prime source of evolutionary technological improvements. Current fighter aircraft were made possible because of investments made in the '50's and '60's. The F-16 is the best fighter of its kind in the world today for the cost. It incorporates advanced technologies such as a high thrust-to-weight engine, composites and fly-by-wire control developed by the laboratories. Several other examples are: doubling the payload capability of the Harrier by using an all composite wing and a substantial payload increase for MX over Minuteman through improved rocket propulsion technology, composities, and inertial navigation. Many commercial aircraft, including the 757 and 767, are also using technologies developed by the laboratories. Key examples are the lost cost, highly reliable laser gyro and digital displays developed under technology base programs. Many equivalent opportunities for the 1980's and 1990's exist. What is of paramount importance is that we continually extract the maximum return on this critical investment.

Since Mr. Grove's statement provides an excellent technical description of the overall DOD Technology Base Program, I will, for the most part, confine my comments to Air Force Technology Base Investment Strategy. In particular, I would like to give some insight into the Air Force process. But first, to put the Air Force Technology Base in perspective and to illustrate its scope, I will give a few characteristics of the program itself that will be followed with a description of the plannning and program formulation process as we currently do it. Finally, I would like to discuss some actions we are currently undertaking to improve the Air Force Technology Base Investment Strategy process.

II. PROGRAM DESCRIPTION

The Air Force Technology Base is comprised of Basic Research (6.1), Exploratory Development (6.2), and Non-System Advanced Development (6.3A). Basic Research is the source of new knowledge and ideas related to long-term national security needs. Exploratory Development is application of technology to the solution of specific military problems. It ranges from fundamental applied research to sophisticated feasibility experiments. Advanced Development is feasibility demonstration of advanced technology aimed at reducing risk and providing options for future military capability.

The FY 83 President's Budget contains $178.9M for 6.1; $527.8M for 6.2; and $429.9M for 6.3A. In total, the Air Force Technology Base funding is $1.1B. This is the 3600 Appropriation Account; in addition, $66.6M is allocated in the 3500 Appropriation Account for military salaries and $27.6M in the 3300 Appropriation Account for military construction.

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These funds are allocated to the 13 U.S. Air Force Laboratories and the Office of Scientific Research at Bolling AFB, D.C. The laboratories are functionally organized by broad areas of technical discipline and are geographically located across the country to take advantage of proximity to both industry and the Air Force Product Divisions. For example, the Wright Aeronautical Laboratories are located at Wright-Patterson AFB, Ohio, along with the Aeronautical Systems Division, and consists of the Avionics, Flight Dynamics, Materials, and Aeropropulsion Laboratories. Other laboratories include the Armament Laboratory at Eglin AFB, Florida; the Engineering Services Laboratory at Tyndall AFB, Florida; Human Resources Laboratory and School of Aerospace Medicine at Brooks AFB, Texas; Weapons Laboratory at Kirtland AFB, New Mexico; Rocket Propulsion Laboratory at Edwards AFB, California; Aerospace Medical Research Laboratory also at Wright-Patterson AFB, Ohio; Rome Air Development Center at Griffiss AFB, New York; and the Geophysics Laboratory at Hanscom AFB, Massachusetts.

Our Air Force Laboratories have approximately 8300 personnel with approximately 4500 being scientific and engineering. The individual laboratories are chartered to conduct a specific portion of the Technology Base Program. For example, the Air Force Armament Laboratory is chartered to conduct technology programs in all aspects of conventional tactical armament and ordnance. The Air Force Weapons Laboratory is principally engaged in directed energy programs such as High Energy Lasers and nuclear effects. As a total set, the charters span the mission of the Air Force.

The technical content of the program is broad and covers virtually all areas of scientific endeavor. Many of the projects are aimed at improvements in state-of-the-art with respect to performance, but it should be noted that a considerable portion also goes to find ways of reducing cost and increasing reliability and readiness. Many efforts are aimed at making the systems we've got work better in the anticipated military environment in which they will have to operate.

Of the total 3600 R&D appropriation for Technology Base, $223M or 26% is required for basic operating and support costs of the laboratories, including salaries for civilian personnel. The remaining 74% of the funds are for contracted programs with industry, universities, not-for-profit organizations, etc. Within this program, approximately 66% is contracted with industry and approximately 8% is contracted with universities.

The principal Air Force organizations charged with management of the laboratories are Headquarters Air Force Systems Command, Director of Laboratories (AFSC/DL); Headquarters USAF, Research and Development (HQ USAF/RD); and the Deputy for Advanced Technology in the Office of the Assistant Secretary of the Air Force (Research, Development and Logistics). The planning and management process is a key activity that takes much effort from many organizations, including the field organizations as well as the management organizations mentioned above.

III. PROCESS

The planning and program formulation process for the Technology Base is a structured process which is aimed at ensuring that the needs and requirements of the Air Force are adequately met. The proposed program is challenged throughout the process through a series of reviews (formal as well as ad hoc). The management challenge is one of not only ensuring that the most important of these Air Force needs are being pursued within available resources, but also one of achieving a balanced program which considers near-term versus long-term payoff, requirements pull versus technological opportunity, and in-house versus contract. The process--guidance, program development, reviews, program approval--is the same for the Basic Research (6.1), Exploratory Development (6.2) and Advanced Development programs (6.3A) although differing in the mechanics of implementation. Descriptions of the processes follows:

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Basic Research (6.1): Planning and program formulation of the basic research program has been delegated to the Air Force Office of Scientific Research (AFOSR). AFOSR is designated as the single manager for research within the Air Force. The principal guidance document used is the Research Planning Guide (RPG). The biennial RPG is developed at Headquarters AFSC using teams composed of technologists from the Headquarters, laboratories and appropriate acquisition organizations. These teams develop research objectives for each of the seven research technical areas (life sciences, flight vehicles, materials, propulsion and power, electronics, weaponry, and environment). With the RPG as the basic guidance document, the planning process starts with top-down project level guidance provided annually in April from the office of the AFOSR Director to his Scientific Directors. The project guidance is implemented by the Scientific Directors through the redistribution of project funds to the tasks which make up the project. On the basis of this tentative technical and funding guidance, task plans are developed, consolidated, and reviewed prior to publication of the U.S. Air Force Plan for Defense Research Science. This consolidation and review process provides the first opportunity for management to assess the impact of the most recent guidance on program formulation. If required, corrective actions are taken prior to the publication of the plan. The documented program plan is thereafter reviewed at Headquarters AFSC by the Director of Laboratories.

Between April and June, each task manager is scheduled to present a briefing to the AFOSR Director which includes the task accomplishments, a technical presentation of the planned program, and a fiscal report. By this time the President's budget has also been published and initial Congressional mark-ups have become available to provide a clearer picture of the funding environment for the year being planned. Corrective fiscal actions and programmatic adjustments as well as technical program amendments are made on a continuing basis. These changes are reflected in the "living" plan which is maintained within AFOSR using a computer-based system. Finally, with the start of the new fiscal year, funds are issued to each research task based on the Congressional appropriation and the final plan as amended.

Exploratory Development (6.2)/Advanced Development (6.3A):
Primary responsibliity for the formulation and implementation of this part of the Air Force Technology Base Program is vested in the Commanders/Directors of the Air Force Laboratories. The program formulation process begins with an examination of the needs and requirements of the Air Force in concert with an examination of threat projections as described by intelligence sources. Guidance documents which are examined to ensure Air Force needs are fully identified include, but are not limited to: the Air Force Planning Guide (AFPG), which provides mission scenarios; Statements of Operational Need (SONs) provided by the Operational Commands; Technology Needs (TNs) provided by the AFSC Acquisition organizations; Logistics Needs (LNs) provided by the Air Force Logistic Command and the VANGUARD Planning Summary (VPS). The VPS is developed by the AFSC planning community and provides development goals for each of the Air Force mission areas--Strategic, Tactical, C3I, Reconnaissance/Intelligence, Space, etc. Each mission area has been analyzed with respect to the tasks required to perform the mission and an assessment of current capabilities to perform that mission against the current and projected threat. The shortfall in capability (deficiency) is restated in positive terms--development goals. These development goals are a key input to the laboratory program fomulation process. Using these formal statements of Air Force needs and requirements, the laboratory planning/program formulation translates them into research and technology goals. Development of the proposed program takes place annually during a period of January through April through an interactive process of program proposals and laboratory internal reviews and adjustments. A critical milestone in the process occurs each year during the April/May time period where the Director of Laboratory staffs, along with appropriate user and Headquarters personnel, review the proposed program at the individual laboratories. This review provides an assessment of

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ongoing effort, final program definition and adjustment for the upcoming budget year and review and adjustment, where appropriate, of the planned program for the outyears. Additionally, a session is held annually in June with DUSDRE (R&AT) and SAFAL staff personnel to apprise them of the strategy being pursued for investment of laboratory technology base funds. The culmination of this annual process is the updating and publication of the individual laboratory Research and Technology Plan. Approval to proceed with the exploratory development program, as adjusted through the described proposal/review process, is issued each year by letter from the Director of Laboratories. The direction for the advanced development programs (6.3A) is issued annually by Headquarters Air Force Program Management Directives and accompanying program direction from Headquarters AFSC.

The process that allocates resources among the laboratories uses criteria similar to the investment strategy "catechism" recommended by the Defense Science Board. A panel consisting of the AFSC/DL Staff Directors develops recommendations for allocating tech base resources among the laboratories. The final balance between the laboratory programs is made by the Director of Laboratories in concert with SAFAL, USDRE and Congressional guidance, and is based on the priorities of the needs and requirements of the Air Force.

Some additional activities which impact and influence the process are USDRE sponsored topical reviews, USDRE apportionment reviews, interdependent program reviews of space and aeronautics technology with NASA and reviews of selected technology programs with Army and Navy counterparts under sponsorship of the Service Joint Directors of Laboratories Committee (DLC).

The planning and formulation process is illustrated on the following page.

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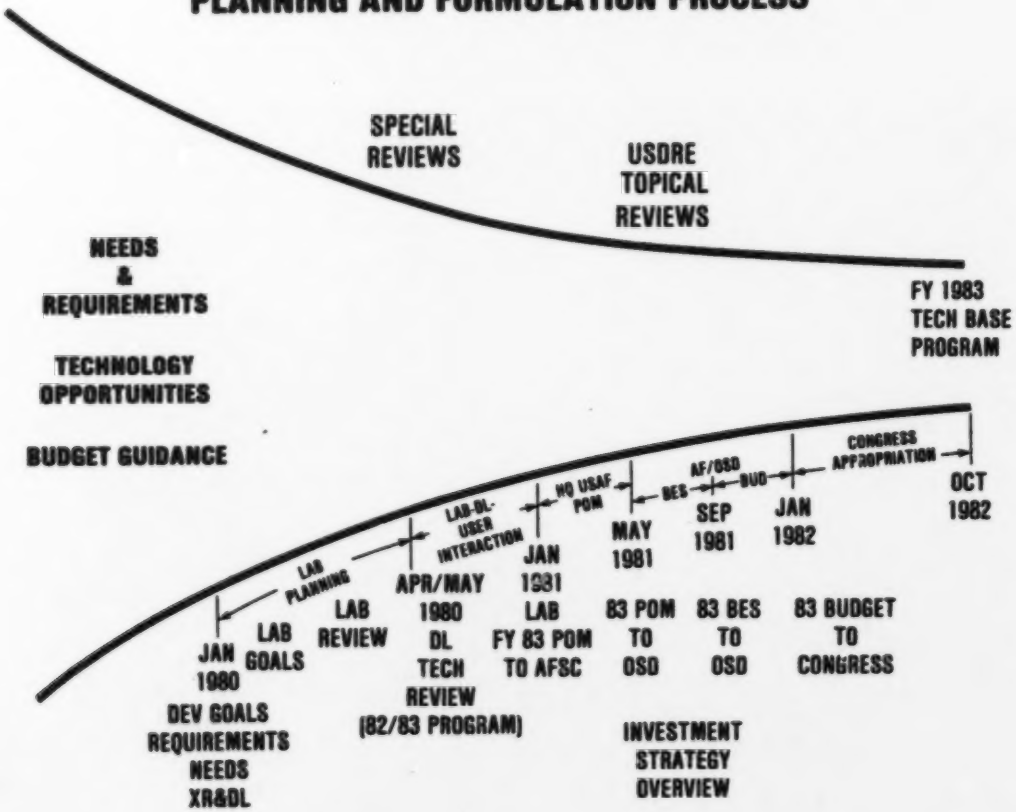
RESEARCH AND TECHNOLOGY PLANNING AND FORMULATION PROCESS



IV. ASSESSMENT AND NEW PLANNING INITIATIVES

As can be seen, the above process is quite involved and represents an extensive effort by the Air Force to properly formulate the Technology Base. In general, we think that the results have been very good, especially considering the difficulty of the task. Nevertheless, there is a general feeling that we need to get more for our tech base dollar, that we need to more closely align the tech base expenditure with mission needs, and that we need to do a better job of technology transition and insertion. Both the Defense Science Board in their recent Technology Base Study and Dr. Robert Hermann, former Assistant Secretary of the Air Force (Research, Development and Logistics), in his DOD Laboratories Study provided considerable insight into these issues. Even though we believe we have an extremely good program, we share their concerns in many areas and feel we must make every effort to improve our Technology Base planning.

In this regard, I feel that there are two very important ways to improve the process: (1) to improve the process itself, and (2) to improve the articulation of the program and associated planning rationale. Strengthening the process will lead to an improved program.

With regard to the process, VANGUARD is one of our major planning processes, but, to date, emphasis has been on relatively near-term programs. Additional work needs to be done to effectively extend to the Technology Base and long-range planning. The Air Force has recently initiated the Air Force 2000 and AFSC 1990 studies which include strong emphasis on top-down planning. A similar concept, referred to as "scenario-based planning" by the DSB and the Hermann Reports, is based on projection/identification of outyear military scenarios and associated military capabilities required to conduct operations. Concepts to satisfy each capability need are postulated and critical technologies required to develop the concepts are identified. For example, a future scenario could include military surveillance operations from space. A space-based infrared surveillance system and a space-based radar are concepts which would provide the needed capability. Critical technologies might include VHSIC, large structures, and space power sources, as these technologies would be necessary to allow the concepts to be realized. By examining outyear military scenarios and associated concepts in a number of areas, the pervasive technologies can be identified. For example, VHSIC or Artificial Intelligence could be critical technologies in many of the system concepts. In this way, the key technologies could be identified and sufficient funds allocated in a focused manner to mature them for application. Also included in the concept of "scenario-based planning" is the idea of major military capability thrust programs. An example is the Air Force Wright Aeronautical Laboratory "Night-In-Weather" Thrust, where a group of critical technology programs are simultaneously being conducted to provide the technology base required to develop a Night-In-Weather operational capability by a certain date. Both of these "focusing" approaches are aimed at providing proper emphasis on those technologies required for high priority Air Force applications.

Building on these efforts we intend to establish "scenario-based planning" as a key part of our Tech Base Investment Strategy process. While we must be careful to keep a balance between our "core" program and these more directed technology efforts, there is little question that the more focused approach will produce a greater, more timely impact on achieving critical military capabilities.

It should also be noted that this "moon-shot syndrome" planning process does not prohibit many lateral benefits in other areas not necessarily envisioned beforehand. For example, the development of automatic three-dimensional target recognition algorithms, possibly required for outyear night-in-weather operations (and thus contained in the Night-In-Weather Thrust), could have significant impact on other areas like space-based surveillance, tactical and strategic weapons, and even medical diagnostic equipment.

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In the same vein, I must carefully point out that we intend to use this planning concept for only a portion of the Tech Base program. We must allow for technology innovation and the truly revolutionary breakthroughs that could drastically change entire scenarios and outyear concepts. A good example was the invention of the laser--Townes was certainly not building the device so that laser guided bombs could be developed.

The second thing that can be done is to improve the way we articulate the Technology Base Program. Recognize, however, that this is an extremely difficult task. The Technology Base is very broad, encompassing an enormous number of highly technical programs. The expected payoff is often quite difficult to quantify, especially for the "core" technology programs. Despite this difficulty, a more concerted effort to describe the program and its supporting rationale is in order.

We have many documents, program plans, and briefings which individually describe parts of the program but not a comprehensive overall description of the Technology Base Program. We spend many hours in structuring the program, but the rationale used in this process is often not well documented. As a result, it is very difficult to get the proper perspective solely from available sources such as Program Element funding allocations, independent laboratory planning documents, and congressional descriptive summaries.

In the future, we intend to find better ways to describe the Technology Base Program and its supporting rationale. One option being considered is to describe the program in a single document. Whereas the specific details of such a document are not yet determined, it would most likely contain descriptions, characterizations, and investment strategy rationale for the "core" program, the "support" program, and the "directed" program. It would be based on and describe the results of an improved, more structured investment strategy process as described above. Such a document could be invaluable in articulating the U.S. Air Force Technology Base Program and potentially could play a key role in the planning, programming and budgeting cycle.

In summary, I have attempted to give some insight into the Air Force Investment Strategy process for the Technology Base. We believe we have an extremely good program before the Congress now but also believe there is room for improvement. We are committed to a program which best meets the needs of the Air Force and will be aggressively pursuing actions to strengthen our planning process and, thus, the program itself.

Thank you.

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Biography

United States Air Force

Secretary of the Air Force, Office of Public Affairs, Washington, D.C. 20330

DR. O. CHARLES WILLIAMS, JR.

Dr. O. Charles Williams, Jr. is deputy for advanced technology, Office of the Assistant Secretary of the Air Force for Research, Development and Logistics. He is responsible for initiating, directing, evaluating and coordinating all programs and policies in research, exploratory development and advanced development within the Air Force.

Dr. Williams was born July 3, 1946, in Hattiesburg, Miss., and attended elementary and secondary schools in Mobile, Ala. He received a bachelor of science degree in 1968 from the University of South Alabama, and the master of science degree in 1969, and the doctor of philosophy degree in 1972, both from Auburn University. His degrees are all in the field of electrical engineering.

In 1972, Dr. Williams joined Teledyne Brown Engineering, Huntsville, as member, advanced development staff. He performed studies in various aspects of remotely pilated vehicles including control, optimum deployment and ECCM analysis. Other responsibilities included evaluation and modification of the Perimeter Acquisition Radar (PAR) software algorithms; and as a key member of the SAM Intercept Missile Program, he was responsible for the Radar Avionics and RF Missile Seeker design. During this time he was promoted to branch manager, Radar Analysis Branch, SETAC Division, where he directed a team of engineers and scientists engaged in radar analysis in support of the Army Site Defense Project. Major areas of interest were chaff, clutter and waveform analysis, ECM/ECCM and sidelobe cancellation techniques.

From 1974 to 1975, Dr. Williams was chief, radar analysis, 20th Surveillance Squadron, AN/FPS-85 at Eglin Air Force Base, Fla. He directed a group of engineers and scientists whose primary duties were aimed at enhancing the operational capability of the AN/FPS-85. These duties included all aspects of the phased array radar system including the operational software algorithms as well as the radar hardware subsystems.

From 1975 to 1978, he served as chief, System Analysis and Simulation Branch, Guided Weapons Division, US Air Force Armament Laboratory, where he supervised thirty engineers and scientists engaged in guided weapon subsystem technology development and analysis support. In 1978, Dr. Williams became technical director, Guided Weapons Division, US Air Force Armament Laboratory. During this period, he was especially involved in the division's major thrusts: development and test of millimeter wave and infrared seekers for anti-armor application and the Midcourse Guidance Demonstration Program. He was heavily involved in the exploratory development program which spanned a wide range of activity including RF, MW, and IR technology; advanced signal processing techniques for target detection and acquisition, clutter and false target rejection and aimpoint control; inertial component development; autopilot/control system design and digital hardware and software technology. Dr. Williams' efforts during this period earned him the USAF Armament Laboratory "Most Valuable Person" award for 1979.

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In January 1981, Dr. Williams was promoted into the Senior Executive Service and joined the Office of the Under Secretary of Defense for Research and Engineering in Washington, D.C. As senior staff specialist for close air support/battlefield interdiction, Dr. Williams was responsible for the preparation of an overall strategy for development and acquisition of tactical aircraft, ordnance, and related equipment. His primary program responsibility was tactical air-to-surface missiles and ordnance. Dr. Williams accepted his present position in February 1982.

He is a member of Phi Kappa Phi, Eta Kappa Nu and Tau Beta Pi honorary societies. He has taught at the University of South Alabama, Auburn University, the University of Alabama in Huntsville, and from 1975 to 1981 was Adjunct Assistant Professor at University of Florida Graduate Center, Eglin Air Force Base, Fla. He was a member of the NATO AGARD Guidance and Control Panel from 1976 to 1981 and has served on numerous other governmental panels and working groups. He is a member of the American Defense Preparedness Association and the Air Force Association.

Dr. Williams is married to the former Maria Corcoran of Mobile, Ala., and they have three children: Jennifer, Mark and John.

Mr. MURTHA. Because we have limited time, I will ask Dr. Cooper and Mr. Grove to make brief summary statements, so that we can go on to the questioning.

Please proceed.

REMARKS OF DR. COOPER

Dr. COOPER. Thank you very much, Mr. Chairman. We are pleased to be here to discuss the issues that you outlined in your opening remarks.

I would like to start by reminding you that we are going to be talking this morning about the technology base which is probably one of the most important appropriations issues in the defense budget from a long perspective point of view. We live in a technical society today and technology provides the wellspring that supplies our economy with the nourishment that it needs to thrive; and in the recent past, over about the past ten years, there has been a diminished flow in the United States from that wellspring. We find ourselves in an economic situation in this country which is largely driven by our inattention to long range technology in the past ten years. The Defense Department finds itself in a much similar situation. We have no hope of keeping up with our potential adversaries in the total numbers of equipment that can be produced by our capability in this country and with the investments that we can make in military equipment.

So our only hope is to be able to create an environment in the minds of our adversaries that deters them from aggression against us through the use of advanced technology. Twice during the last week we have seen examples of where technology has triumphed in a large scale military operation. One is in the operations of the United Kingdom in the South Atlantic against the Argentine aggression against the Falkland Islands. In that engagement technology played a major role. Technologies such as the short takeoff and landing aircraft that were used by the British; the large scale armada that was brought together within ten days to two weeks and was able to steam eight thousand miles and to put 25,000 people into the location of the Falkland Islands and to prevail. The only issue that was brought up in that engagement with respect to what the outcome would be was the employment of a very limited number of advanced technology missiles by the Argentines, mis-

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siles that they had acquired from a power in Europe that had the advanced technology that needs to be employed in modern warfare. The intimidation of that technology of this large scale armada was substantial, and the outcome of that circumstance was in question until tactics and strategies were adopted that could counter that single advanced technology.

Again, the acquisition of technology by the Israelis in the Middle East made it very easy for them to prevail over a large scale Syrian Air Force and they were able to gain air superiority within days, even though the Syrians were employing some modern technology in their surface-to-air missiles and in some of the advanced aircraft that had been provided by the Soviet Union.

Technology is the way that we intend to deal with the large scale forces against the United States. I want to point out that in this country over the last ten or fifteen years there has developed a mentality of very short-range investment in technology. In industry, the reason behind that is the large investments that are required and the cost of money. The cost of money has, over the past few years, caused our industries to invest only in those technologies that can pay off, in quotation marks, within a few years; that is where the return on investment begins to be realized within perhaps two to three years. So the longer term technologies, those that will keep this country economically viable in the time period five, ten or even fifteen years from now have been entirely neglected.

In the period from 1965 until about the mid-1970s, defense suffered from the same kind of problem; that is, we had a continually decreasing investment in the longest range technology. Much of our technology money was being diverted to projects and programs that had very near term applications. It has only been in the last few years when the management in defense has come to realize that this is a vacuous strategy, a strategy that is clearly going to lead this country into serious problems in the more distant future; so a tendency to reverse the trend of that investment in short-term research has been the policy in defense.

I believe with the support of the Congress we have essentially turned around our view of research and technology as not only something to consider in the five year defense plan, but have broadened our horizons out ten years or more beyond. We want to emphasize that investment strategy, that long-term investment strategy, and try to give you some impression this morning of why—how we have arrived at the scale size of the S&T programs, how we have arrived at the essential technologies which we think can really make a difference for our forces in the latter part of the eighties and the first part of the 1990s when our R&D programs are due to pay off, and we would like to tell you about some of the management initiatives we are taking to try to strengthen those programs and to insure that our forces will be competitive, although they may be numerically inferior in that time period. They will be highly competitive and provide the deterrent effect which we expect to have to provide for this country through the end of the century.

I would like to point out to you that the current Administration, in coming into office, took the broad view of research and technology that I have outlined to you and they recognized that there

were certain management deficiencies in the Defense Department relating to our research and technology programs. Dr. Richard DeLauer, who is the Under Secretary for Research and Engineering, in conjunction with the Deputy Secretary of Defense, and the Secretary, came up with a plan that we think will strengthen the management of our research base in the longer term. This plan essentially created a new position in the Defense Department called the Assistant Secretary of Defense for Research and Technology. The responsibility assigned to that position, which is prospective and needs congressional approval, was to look over all the basic research exploratory development, and the advanced technology development programs, the so-called 6.1, 6.2, and 6.3A programs. In addition, that position was also to be occupied by the Director of the Defense Advanced Research Projects Agency, a position which I now hold.

Dr. DeLauer asked me, as designee, to prospectively fill the position of Assistant Secretary of Defense. That reorganization or restructuring of the senior management in R&D has met with mixed criticisms from various parts of the R&D community, and we believe that it is a very useful and feasible thing to do, that it will give us that long range perspective that we believe we need to manage those programs and will provide an added measure of cohesiveness to our S&T programs by drawing the DARPA programs closer to those in the military services. I would like to solicit your support for that management arrangement which is now under review by the Congress and which is supported by the Secretary, the Deputy Secretary of Defense, and by Mr. DeLauer.

With those initial words, I would like to relinquish the floor to Mr. Grove.

Mr. MURTHA. Mr. Grove.

REMARKS OF MR. GROVE

Mr. GROVE. I am indeed grateful to testify to you today on behalf of the Science and Technology program of the Department of Defense. It is the first time I have had that privilege.

I shall expand on the Science and Technology Program a bit over your opening remarks of concentrating on the technology base. The S&T program includes the technology base plus our advanced technology demonstration programs, our so-called 6.3A programs. I think it is important to keep that in mind because it is that transition from the technology base to the Advanced Technology Development Program and thence to systems in the field that is really the difference in the mission between research and advanced technology within OSD and Dr. Cooper's activities at DARPA and some of the 6.1 and 6.2 activities that we have. The fiscal year 1983 budget request for the Science and Technology program, including all of the services and defense agencies, is roughly $4.3 billion or about two percent of our total Department of Defense budget request. This represents real growth above the official inflation figures of about eleven percent. So you can see that we are emphasizing the S&T program within the DOD. The largest percentage increase in that budget is found within the Advanced Technology Development portions of it. We are proposing to increase it by

about 22 percent; not the largest dollar increase, but the largest percentage increase.

As Dr. Cooper stated, the Science and Technology program, and in particular the technology base portion of it is very important to us. It is indeed a source of the future systems options for the Department of Defense. It is also our insurance against technological surprise from potential adversaries. It is important to understand that we must maintain continuity in that program, that a hiatus in the Science and Technology program can give us a blind spot downstream from which it could be very difficult to recover. Even with the modest growth that we are proposing in fiscal year 1983 the resources are going to remain strained in the technology base and in the Science and Technology program. Dr. Cooper mentioned that gap, that valley, in our budgets from 1965 to 1975. Quite frankly, even with the growth that we are proposing on a constant dollar basis, we are still below the 1965 level in our Technology Base program. It is still a problem.

We did long ago make a national decision to oppose our adversaries and their large quantities of weapons systems and troops, with quality and superior technology. That superior technology is intended to offset the Soviet and Warsaw bloc numbers and also intended to keep ahead of their growing technical capability. They aren't standing still either. Many of their systems, as I am sure you are well aware, are on a par with ours. It is quite a concern to us.

We also need to maintain growth in our own defensive capabilities. A defensive capability as much as any other enterprise, standing still is equivalent to dying.

So growth is necessary to keep our people motivated and to keep the pressure on the private sector which supports us. We also rely upon the Science and Technology Program to help us manage the costs of acquisition and support of our systems once they are fielded and to improve the productivity of our industrial base sector.

As far as who accomplishes this work, it is mixed. We draw upon the three major segments of our society. About 52 percent of our funding and our resources go into the private sector, principally industry, the not-for-profits, and so forth. About 14 percent of that budget is dedicated to university work and to the federal contract research centers, leaving approximately 34 percent for our in-house laboratory structure. That is the 73 laboratories and 60,000 people that constitute the DOD laboratory establishment.

I think it is important to say a few words about the role of the Office of the Secretary of Defense and the Deputy Under Secretary for Research and Advanced Technology in the Science and Technology planning and execution process. It is a rather broad charter. Principally our responsibility is to set the overall goals and objectives for the services and the components for their portions of this program. We do that principally through the Defense Guidance document which is issued early in the calendar year and serves as the basis for the budget submissions by the military departments and the defense agencies. Once that is done, we monitor and oversee the actual work that is conducted by the components. Our principal objectives are to assure that there is adequate coordination across those laboratories the 60,000 man work force that I

mentioned earlier. We strive to minimize the duplication that is bound to appear, at least to those who observe this operation casually. We also provide a quality assurance and a quality assessment function for research and development done by our laboratories and by our contractors.

Another important factor that is a principal responsibility at the OSD level is to identify the gaps that may not be apparent as one looks from within a laboratory or within a service to ensure there aren't surprises there. We try to assure that there is a balance from the research to the exploratory development to the demonstrations, and that there is a balance across the technologies. It is important to ensure that those which really deserve attention are getting their fair share of resources.

A principal objective of Dr. Martin, who is here with us today and who is our Deputy Under Secretary for Research and Advanced Technology, is to accelerate and to improve the process of transition of the products of the S&T environment into the field. Not prematurely, but to make sure that those things that have been adequately demonstrated get considered as systems are conceived and go through the later stages of the development process. That is a principal objective of our office.

In addition to that, in the last few years, we have come to the point of managing a few very carefully selected programs directly from the OSD level. The principal ones are the VHSIC program, the very high speed integrated circuits program, and the Ada program. The Ada program is intended to provide a new, modern and improved language for the programming of the myriad of computers that support the Department of Defense. Those two things are managed in the form of joint program offices that report directly to Dr. Martin. There are anomalies and I know you have some interest on that point. After the setting of goals and reviewing and analyzing the programs that are going on in the services, the rest of the responsibility for the execution of the program and for the detailed planning is basically vested in the military departments and the defense agencies; and based primarily upon the Defense Guidance which is our top level policy document.

We consider it to be their responsibility to plan the specific efforts, to conduct the programs, to make the detailed evaluations that are necessary to support transition because it is specific to the missions and roles of those departments as to what goes where and when. The process does vary across the services because the problems are different, but it is quite detailed.

It is a continuing process. It is not something that happens in a one month planning cycle. The planning, evaluation, winnowing out of unproductive efforts is something that is a continual process in the department. This is a very formal sort of thing and again that formality varies from department to department, but at the program and project level it varies considerably from a level of effort activity. Priorities are established; they are agreed to; they are filtered; there are negotiations conducted from the field level up through their headquarters until they develop a program that meets their identified requirements.

Recently, and on a continual basis, we have reviews from outside agencies that I am sure you are well aware.

The Defense Science Board last summer conducted three in-depth studies of our science and technology program which gives us a lot of food for thought and basis for change in our management process. The DSB panel on the technology base met last summer and identified the big 17, as they said, technologies which could make a considerable difference in our future defense posture. They range from software to very high speed integrated circuits and so forth. Also, they concentrated on and identified as a major problem for us the efficacy with which we can transition technology once demonstrated into effective weapons. They have made some recommendations on how the budget should be altered and varied in order to give a bit of emphasis there. They also looked at the university responsiveness and clearly came to the conclusion that DOD and the universities need each other badly and that we do need to improve to some degree the way in which we work together. Specific recommendations were made as to how to go about that. We are trying to implement those with reasonable speed.

The Herman Committee took an in-depth look at our laboratories both from a quantity and quality standpoint and made recommendations in that regard. We have a task force established to implement many of those recommendations. Some of them are quite easy; others will come with a great deal of difficulty.

As I mentioned before, this is a continuing process, both from a management standpoint and a planning standpoint. We will never be satisfied that we have achieved perfection as the people that look at us from the outside will never be satisfied. Science and Technology is amenable to management. It doesn't run open loop. At least we have the opinion that we are not running that way. We generally have good cooperation from the Services and from the private sector. In those cases where we have differences, we are able to negotiate with them to a general degree of satisfaction.

Since our future defense machine is dependent, we clearly believe, upon the degree of success of the DOD Science and Technology program, we feel that our responsibility in this area is great. We are not overwhelmed by it, however. The erosion of the technology base that was experienced from the sixties to the seventies begat a problem from which we have not fully recovered, but the trend is encouraging.

I think the message to be learned from that experience is that continuity and continued attention to the Science and Technology program is critical. Hiatuses in that program discourage the scientists and engineers of our culture and encourage them to look in other areas for their livelihood. It is very difficult to turn them around in any reasonable amount of time.

Our resources are modestly growing. If our requests are granted—they do remain strained and with the continued support of the Congress we can offset with technology a significant portion of the formidable threat that we understand that we face.

Thank you, Mr. Chairman.

SOVIET R.D.T. & E. EFFORTS

Mr. MURTHA. Mr. Grove, you mentioned on the first page of your statement the threat from the Soviet RDT&E effort. Would you describe that threat quantitatively as well as qualitatively?

Mr. GROVE. It is very difficult to address it quantitatively because of the difficulty in gathering information in that regard, and the differences in the way in which our economies work. We are convinced that they are putting about twice as much effort into Research and Development as we are and that their growth rate is much steeper. The effectiveness of that program and what comes out of it with respect to the efficiency of our——

Mr. MURTHA. You say twice as much. Is that this year's dollars? And then you say it is growing more rapidly. That is a little general. Can you be more specific than that? Twice as much this year, do you mean?

Dr. COOPER. Could I try to characterize an answer to this? It is very difficult to separate out the S&T programs in the Soviet Union from their overall defense research and development activity. We can do it in certain isolated cases. For instance, we know in the high energy laser program, which is the largest technology base program that we have in the Defense Department and which constitutes in the President's request for 1983 for fiscal year 1983, about $433 million in this country—estimates of what the Soviets are doing, gained from available information indicates that they have a program in the Soviet Union in high energy lasers that is anywhere from three to five times as large as ours. So it means that they must be spending, in equivalent dollars, well over a billion dollars a year on high energy laser research.

Since they have fielded no weapons, it is still—can be characterized as a technology base activity.

ENGINEERING AND SCIENTIFIC MANPOWER

Mr. MURTHA. Go back another step. Go back to their educational system.

Dr. COOPER. I was going to get to that. The next indicator we have is the rate at which they are graduating from their educational institutions scientists and engineers. Currently we understand in the Soviet Union they are graduating about 250,000 engineers and scientists per year. Now, the corresponding number in the United States is about 50,000. Of that 50,000, nearly one-half are foreign nationals, many of whom return to their countries of origin; so only a fraction of that 50,000 is really available to do defense research in this country.

So the indications are that if those 250,000 graduates each year in the Soviet Union are gainfully employed in Science and Technology, and if some particular fraction of those are engaged in defense research, that their research and development activities must be accelerating in relationship to ours, just because of the number of human beings who are working on the problem in the Soviet Union.

Mr. MURTHA. Are you talking, as regards the United States, about defense research being done both by the government and by industry?

Dr. COOPER. Yes.

In the United States the growth of defense research over the past few years can only be characterized by the amount of money that we are putting into it, and consequently the growth is modest, amounting on the average, over the past few years, to a few percent per year. If you try to relate that to the number of people who are migrating into defense research, the defense research community is not expanding at a substantial rate. As a matter of fact, all of the indications are—particularly in critical technologies such as microelectronics, for instance, there is tremendous competition for those engineers and scientists who work in that discipline area to work on consumer products in this country as opposed to working on defense research because we are a consumer nation.

The Soviets, on the other hand, are not a consumer nation. They do not provide consumer products for their citizens at nearly the rate we do. Consequently, the demand or the pressure on their scientists and engineers to move into the consumer products area in the Soviet Union is clearly much less than it is in this country.

Mr. MURTHA. So they are graduating at least five times the number of scientists and engineers and a great proportion of those—the greater proportion would go to the defense industry because that is where they spend more of their money?

Dr. COOPER. That is correct.

Mr. MURTHA. What are we doing to alleviate the educational problem? Anything?

Dr. COOPER. Yes. We have a number of initiatives that we are taking both this year and in the fiscal year 1983, and proposals in the out years to accelerate our activities to stimulate the educational institutions to produce more of the disciplines, the scientific disciplines that we need.

Perhaps it would be worthwhile for some of the other folks here to comment on some of the specific programs which are diverse. They span all three services and DARPA and some of the other defense agencies are putting funds into that. We have also been working with the National Science Foundation, which has substantial connections to the universities and which also is beginning to work with us on a more national scope to try to fix this problem. In addition, there is a great deal of concern about the quality of not only undergraduate and graduate college education, but the quality of our secondary school education.

The head of the National Academy of Engineering sponsored recently a major conference here in Washington to look at this problem of the quality of science and engineering education in the United States and to come up with proposals as to what the government might do in its policies and its expenditure of federal funds to alleviate some of the problems that we see there.

Perhaps some of the others could comment on specific programs. For instance, the Navy has an interesting expansion of its fellowship program through the Office of Naval Research, which we think will help, as do some of the other services. Dr. Smith?

Dr. SMITH. I would be glad to. I am Jerry Smith, the Technical Director of the Office of Naval Research.

In our fiscal year 1983 submission, we are requesting a million dollars as part of the Navy's basic research appropriation for initi-

ating a graduate fellowship program which is to attract U.S. citizens, first-year graduate students into six areas that we have identified which have the greatest criticality from the standpoint of Navy and DOD interests in which we find a deficiency in terms of U.S. citizen students today.

Mr. MURTHA. Attract them to government service or just attract them to the field?

Dr. SMITH. Attract them to the field. I can give you a little background here, having spent a dozen years in academia when I was a professor.

What has happened is the U.S. citizen undergraduate enrollment in science and engineering is fairly healthy relative to what it has been, say, in the early seventies. However, large numbers of U.S. citizens are going out in industry because they are not attracted by the low stipend levels that have been offered to graduate students. Their places at the table have been filled in large measure by foreign students. However, we still have a net decrease or decline in the number of graduate students in science and engineering. In cases like aeronautical engineering and electrical engineering, we have situations where the graduate student population is over 50 percent foreign students.

FEDERAL AID TO EDUCATION

Mr. MURTHA. Doctor, isn't this recommendation by the Administration to cut back on aid to the graduate schools going to be devastating to an engineering school? I hear from the colleges themselves. They are saying to me, our graduates are going to dry up. Of course, this will include engineers and scientists, it seems to me, if we don't make some money available to the ordinary student. Don't you see this happening?

Dr. SMITH. Yes, but I want to distinguish between those people who are involved in post-graduate education who are the ideamakers and the fount of new knowlege for this society in the next 20 years as opposed to the typical undergraduate student.

Mr. MURTHA. Let's talk about graduate schools. There will be no loan money available to graduate schools.

Dr. SMITH. Yes. That will have an impact, but in the fields that we are talking about, we are talking about students who don't have to borrow money. We are talking about the question of whether they go to school on an $8,000 or $10,000 a year stipend versus going to work for Hughes Aircraft at $27,000, $28,000 a year.

Dr. COOPER. As a matter of fact, Mr. Chairman, it is just these programs which we believe will not only offset, but substantially augment our supply of scientists and engineers.

Mr. MURTHA. What do the Soviets do? Do they just pay their way through school? If somebody wants to go to school, do they just have a free education?

Dr. COOPER. Basically the Soviets have free education. They are in a highly competitive environment. That is, once you are qualified, then the government subsidizes completely the education in the Soviet Union, but the qualification standards are very high and the esprit very high. It is very competitive. There are perquisites available to high level scientists and engineers in the Soviet Union

that do not pertain to the rest of the population. Consequently it is very desirable to be a scientist or engineer in the Soviet Union.

NAVY GRADUATE FELLOWSHIP PROGRAM

Mr. MURTHA. So you are focusing on one area of shortage in putting a million dollars which will affect how many students?

Dr. SMITH. We are targeting—we have already, in anticipation of congressional approval, admitted or offered fellowships to 41 students. We had 400 applicants in the six fields we identified: electronics, materials, computer science, applied physics, fluid mechanics, and naval architecture. Our plan is to expand this program. In 1984 we would double it and reach a steady state in 1985. The kind of attraction that we offer we think has really pulled out some absolutely superb students, just first rate. We are really pleased at what we have seen so far. In addition to a $12,000 a year stipend and an $8,000 tuition grant to the university, we offer them summer employment in Navy laboratories.

Mr. MURTHA. Will that cover expenses? $8,000? I see now some of the schools, 13, 14 thousand dollars.

Dr. SMITH. That is total cost. We are talking about $20,000, if you want to think in those terms.

Mr. MURTHA. So you are willing to——

Dr. SMITH. $12,000 to the student.

Mr. MURTHA [continuing]. Cover all their tuition costs, room, board, everything?

Dr. SMITH. That is correct.

Dr. COOPER. Plus $8,000 as an overhead contribution to the university that they go to?

Dr. SMITH. Which pays their tuition and fees. Plus the prestige associated with being selected in a national competition.

Mr. MURTHA. This is any school in the country they choose to go to or do you pick the school?

Dr. SMITH. It is any school they choose to go to. There should be no question in your mind that competition was high. To some extent—one of the things we looked at was where they wanted to go to school.

Mr. MURTHA. The best schools, the best engineering, scientific schools in the country?

Dr. SMITH. In that particular field.

Mr. MURTHA. I understand.

Dr. COOPER. You realize, sir, this is only one program and that we have really two other major ways of augmenting the number of scientists and engineers graduating from our schools. The second way is that we do spend contract research money in our universities and by and large this contract research money not only supports faculty members and principal investigators in those universities but there are a number of graduate students associated with each one of those who are generally supported by those same research contracts. So we have this additional technique of getting support to graduate education in science and engineering.

Mr. MURTHA. Is there no obligation by the student after he finishes a course like this where you give him the education? Or will his simply being in that field be enough of an advantage to the

country that he will not have an obligation to work for the government?

Dr. SMITH. That is correct, in this particular program. There are other programs that do have obligations attached.

Dr. COOPER. The other thing we are doing that does have a major effect and where there is a direct connection is in our ROTC programs in the services. The services have policies now which vary from service to service but generally favor engineers and science education in the ROTC officer corps so they give a very large preference to accepting people into the ROTC who are studying in these areas. Consequently, this also provides additional funds for engineering and science education.

Mr. MURTHA. It might be very competitive. I know I have heard from some students who were not accepted who had very high scores. Of course, they are disappointed. I could see with their scores that the people who were chosen obviously had higher scores.

Dr. COOPER. That is correct. We are attracting very excellent students in these programs.

Mr. MURTHA. On the other hand, we are not coming anywhere near the magnitude the Soviet Union's effort in producing the basis for increased technology. The students obviously are the ones who will have to give us the ideas and we are not producing them.

Dr. COOPER. That is correct. We are doing better in our coming budgets and with our programs for next year. We really are suffering from about a decade of neglect in this area. We are obviously playing catch-up ball in this particular area.

ENGINEERS' SALARIES

Mr. MURTHA. The salaries reflect the engineers are in short supply. They are being paid much better than any other college graduate?

Dr. COOPER. Yes. Indeed, another major issue or problem we face is the fact that the faculties of many of our colleges and universities have been raided by industry. We have been eating the seed corn from our colleges and universities, those faculty members who are qualified to teach at a high level in graduate education. Consequently, we have been looking toward and taking steps which we feel will keep the faculty members on the campuses rather than having them drift away into those lucrative positions in industry.

We can't do that generally by providing funds that substantially raise their salaries to comparability. We can have some influence in that direction, but only small, because of the competition on campuses for salaries, getting the salary differential between the engineering department and the history department or the English department is not a very feasible thing to do on many campuses, but we can provide them, those faculty members, with environments which research contracts so that they can pursue their research interests in areas where we have common interests; we can provide them with new equipments to bring their laboratories up to some of the most modern in the world; and we can provide them with graduate students of very high quality who can work with them.

UNITED STATES AND U.S.S.R. INVESTMENTS IN TECHNOLOGY

Mr. MURTHA. One thing I do not understand. The Soviets have more scientists, and yet from everything I see, our technology is superior. While they may be ahead of us in some specific cases, in almost every area we have superior design, and superior equipment. How do you explain that even with our having so many less people involved, we come up with superior products?

Dr. COOPER. I think there is an explanation for that which is quite simple. That is in 1958, when the Soviets orbited the Sputnik, there was a massive infusion of capital and funding, yearly funding, into our Science and Technology community. We are still riding on the fruits of those 1950s and 1960s investments that we made in Science and Technology. It was in the seventies that we fell down. So it is going to be in the late eighties and nineties when we have a tremendous shortfall unless we are able to accelerate our efforts and to be very innovative in covering the difference during that period of time.

Steady investment in long-term research and technology is important. My opening statement said that over the past ten years, not only in defense, but also in industry, have we been neglecting that for various reasons, some of them economic, but many of them management shortsightedness.

Mr. MURHTA. Are you saying that we are going to start losing our edge, as you see it, because of this shortfall in the last ten years?

Dr. COOPER. We are living on 1960s technology now. That is why we can hold the Soviets at arm's length, but in the late 1980s and 1990s, we are going to have a tough time holding the Soviets at bay unless we get on our technological horse today because the lead times for advanced technology and new innovation to get into our forces is 10 to 15 years. We have striking innovations in research that occurred in the sixties that make our systems, in many cases, superior, but we are seeing the Soviets catch up in undersea warfare, in look-down/shoot-down aircraft; in space technology. They are overtaking us at a tremendous pace. Their materials technology; they have always been strong in math. Their mathematical technology exceeds ours. There is a crisis in mathematical sciences in this country today recognized by the National Research Council; and I have a letter on my desk today pleading for defense support for mathematical sciences in this country for that purpose, for that reason.

SUPPORT FOR STUDENT EDUCATION

Mr. MURTHA. For years we have had a number of programs which provide various kinds of financial support for students seeking higher education. As a result, almost everybody could afford to go to even our best schools. Are you saying that enough of them didn't enter the engineering field?

Dr. COOPER. That is correct. As a matter of fact, you may recall that during the Vietnam conflict in the latter part of 1960 and the early seventies, there grew up in this country a large anti-technology sentiment.

The reason why I think we suffered to a large extent from technology neglect in the 1970s is an outgrowth of this anti-technology sentiment.

In that period of time, from the latter part of the sixties when we were actually graduating well over a hundred thousand engineers and scientists each year and graduating on the order of maybe 40 to 50 thousand lawyers, today that ratio has exactly flipped.

Mr. MURTHA. We are graduating 100,000 lawyers a year?

Dr. COOPER. We are graduating about 125,000 lawyers in the United States per year and instead graduating 50,000 engineers.

Mr. MURTHA. No wonder we are in trouble.

Dr. COOPER. I think many of the very promising intellectuals in the 1960s were driven out of technology and into what they believed to be humanitarian fields of endeavor. I do think we do suffer in the United States today from a lack of the technological resources that would be available to us if that anti-technology sentiment had not been spawned.

Mr. MURTHA. I am very concerned about the cutback in aid to students, undergraduate and graduate, of broad-based educational benefits. It means we will reduce the pool of educated young people we can draw from. We are going to have this shortfall down the road when we will also be feeling the effects of cutting back energy research by almost $900 million. Ten years from now we will suffer from that cutback in those fields, the same as we are in defense right now.

Dr. COOPER. Well, you—the perspective we need to take on this issue is clearly the broad perspective. We recognize in defense that defense authorizations and appropriations cannot solve the problem of producing the number of scientists and engineers needed in this country both in the civilian sector and in the defense sector.

Mr. MURTHA. Excuse me. I have to go vote. I will be right back.

[Recess.]

Dr. COOPER. If I might, I can finish that thought. The thought was we realize we can't solve that problem completely in defense. We can only do our part. What we have done is, we have been working with the President's science adviser, Dr. Keyworth, with Dr. John Slaughter, head of the National Science Foundation, and other interested people in the federal programs to try and coordinate and do what we can in the federal programs; but, in addition, we have tried to think of innovative new policies that would stimulate industry and state institutions to also contribute what they can to this—to solving this problem.

I know I have two young boys in college. One of them is in engineering in a college in New York State. Both of those young folks are receiving stipends from the state of Virginia. The State of Virginia has a state-supported scholarship program which gives funding and without which I would not be able to maintain these two youngsters in college. I think it is a shifting of some responsibility out of the federal programs into these state programs which are very well administered. I want to compliment the State of Virginia for the relationships that I have had with them on this program, and also we have been putting in place a policy of stimulating investment by defense contractors of their industrial independent re-

search and development funding into universities by giving it preference of a sort in our assessment of whether it is applicable to military programs in our assessment program. So we are stimulating them to make investments of their IR&D funds directly into universities so that we will gain the benefit in the increased numbers of scientists and engineers there.

Mr. MURTHA. How do you keep a scientist, say, working for the government, or an engineer? A scientist's most productive years are when his children are in college. He can't afford to send his children to school without some sort of help from the state if he works for the federal government. So it seems that we lose an awful lot of talent when we don't have some program to offset the low salaries that we are paying federal employees.

Dr. COOPER. Well, that is exactly the reason why we are instituting these particular programs that are aimed at specific defense needs.

Mr. MURTHA. But it is so narrow compared to the magnitude of the problem. We might be moving in the right direction, but we are moving awfully slow, it seems to me.

Let me ask a few questions here the staff has prepared.

ESTABLISHING SIZE OF TECHNOLOGY BASE BUDGET

Please describe how the size of the budget for the technology base is established.

Mr. GROVE. That is a multi-faceted problem, as I mentioned in the opening statement. This whole planning process is a continuing one. We make some general assessments from the OSD level as to where priorities should be placed and the Defense Guidance gives policy guidance to the services. Then the Services in their process develop their ideas in these areas against their other needs for hardware, for O&M support, for other system and support programs and come to priority decisions as to how much they can—

Mr. MURTHA. If you start going to a higher base in one of the services and give them a percentage increase, is that really solving your problem?

Mr. GROVE. I don't know that it solves the problem, but it is about the only process that we have to show interest and emphasis. The next step is the assessment of how those programs then rack up as they come in during the POM process, and, as I indicated earlier, each of the Services does this in a slightly different way. We then try to make an assessment of both the value of those programs and the magnitude of them and return that guidance to the Services for their further development of their budget.

It is a continuing and an iterative process.

Dr. COOPER. May I add something to that, Mr. Chairman? This process of establishing the overall size of the research activity in defense is a major problem. The guidance that we give is general guidance; that is, it recommends not only the scope of things by taking the previous year's research activity as a base and recommending either increases or decreases on a percentage basis; but it also specifically outlines the priority areas where we want investments made.

In periods where there is expansion—that is, where we are generally recommending to the Services that they come back and recommend programs that represent a whole which may be greater than last year's expenditures in real growth, we are looking for investments in new technology areas generally. We are looking for them to take increased funds and invest them in new technology areas where we see high leverage, high payoff. We give specific guidance as to where we believe these areas may lie. It is only in the process of their giving back their proposed programs that we finally agree on whether they have met our criteria and whether they have actually made wise investments of this new capital which we are injecting into the process. If they don't, then it scales back and the guidance is breached.

PERCENTAGE INCREASES IN TECHNOLOGY BASE FUNDING

Mr. MURTHA. How do you determine, though, the percentage of increase in each of the areas? It looks like you are saying, well, you have just this much money and divide it up proportionately. Is that the way you do it?

Dr. COOPER. No, that is not the way we do it. It is done by a process which I believe is—tries to stimulate the interests in the various technology areas in the appropriate services.

Mr. MURTHA. I would think that money for each service would fluctuate up and down from one year to the next, depending on what programs are being pursued. But it doesn't look like that is what is happening.

Mr. GROVE. Perhaps one of the services would like to speak to that.

Dr. WILLIAMS. From a Service perspective, consider our basic research, 6.1 dollars, as well as our exploratory funds. We get extremely broad guidance in terms of major areas of emphasis that we should take into account in formulating the program; but from that point on it is the responsibility of the services to reflect the Service needs, project requirements to determine what deficiencies we have in our systems, and to emphasize at those technologies for investments which have long-term impact on the specific Service, in my case the Air Force.

Both from a headquarters level down and from the field up in our labortory system, we have a very comprehensive program for establishing, on a work unit basis, what we intend to get out of each technology package. This process forms the basis for determining package priority and subsequently formulating the total program.

Mr. MURTHA. Aren't you always driven by the figure that you get?

Dr. WILLIAMS. We have to, obviously, govern our entire submission by the fiscal guidance we get, but the way we establish the total program is from a bottoms-up (with headquarters guidance) competition among various proposals to get to that total program.

Mr. MURTHA. You see, Dr. Williams, what it looks like is happening to us is the percentage of increase is the same in all the services. So it doesn't seem to work that way. It is almost as if you are

saying from the top down here is what you are going to get, and then you pattern your research after—

Dr. WILLIAMS. We are constrained by fiscal guidance that tends to be—for example, in basic research—the same for all services. Last year it was typically—from 1983 to 1984, typically in the seven percent category real growth.

Mr. MURTHA. Where did you get the figure of 7 percent?

Dr. WILLIAMS. That figure comes from Defense Guidance policy.

Mr. MURTHA. Where did you get that guidance?

Dr. COOPER. It comes from Research and Engineering.

Dr. SMITH. I think you need some perspective too. The perception is that you build up a program to equal a dollar amount. The fact is the opposite is true. You have a far greater number of opportunities to invest in than you have dollars to pay for, first of all. Secondly, just from the Navy perspective, in 1965, Category 6.1, 6.2, basic research and exploratory development represented 35 percent of the RDT&E budget of the Navy. Today it is 13 percent. Is that a kind of thing we want to maintain? Is that something that is comforting? I just don't feel we are in the position here today of being at risk, of spending too much for the technology base relative by just looking back at some of the things Dr. Cooper was saying earlier.

We always have opportunities to spend, to invest in other areas. There were things that we didn't do in the seventies because we didn't have the funds. We can't weld four inch thick titanium plate the way the Soviets can. We don't even know how to do it. We did not invest in BW and CW related research and exploratory research in the seventies both for political reasons and because the funds didn't exist. The political reasons provided the basis that tipped it over the edge from being funded. There are a number of instances like that.

Mr. MURTHA. I can understand political guidance. That is up to the elected Administration to give you guidance, and to the Congress to give you guidance, also. I realize also you are constrained by money. Nevertheless, there must be times when the Air Force is working on a super important project, or the Navy, or any of the Services, and yet they still budget the same percentage increase. So you are constrained, even on that high level project, by the amount of funding that you get, which delays or spreads it out. That is what you are talking about. You have plenty of projects, but you are constrained by the amount of money that you receive.

Dr. SMITH. What you are talking about, if you get into a certain area you want to focus on—if I use just a basic research example because I happened to be there—say, doing more oceanographic research in the South Atlantic and the Indian Ocean is something we need to do. That is one area we also didn't sponsor in the seventies for lack of resources. That comes out of the hide of chemistry, physics, or electronics. That is something we did not do.

Dr. COOPER. Another issue here is that that varies in each of the budget categories. For instance, in the basic research programs which are funding activities which have broad applicability, you would not expect to find great variation in the demand on a per-Service basis for the kind of research and activity in that area, but when you get up into the 6.3A programs, the advanced technology

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demonstration programs, then there are opportunities for large variations in the demand for resources for specific system-oriented feasibility demonstrations. In that budget account you do find substantial variations between the Services on a year-to-year basis on funds expended.

BASIC RESEARCH FUNDING

Mr. MURTHA. Let me go back to basic research. I assume the government funds most of the basic research in defense, is that accurate?

Dr. COOPER. No. I don't believe that that is right.

Mr. MURTHA. Percentagewise that is not accurate?

Dr. COOPER. I would suspect percentagewise there is more basic research money invested by the industry——

Mr. MURTHA. I am talking about long-range fundamental research.

Dr. COOPER. I don't know what the proportion is.

Mr. GROVE. I can't answer that question either.

Mr. MURTHA. Put that in the record.

[The information follows:]

The National Science Foundation advises us that the total 1982 national basic research spending is estimated to be $9.3 billion. Of this total, about $6.2 billion is from federal sources; about $1.6 billion is from industry sources; about $1.0 billion is from universities and college sources; and about $.5 billion if from other non-profit sources.

Dr. COOPER. I think we owe you going back and looking at the statistics to find out what it is. I suspect that defense funds or even, if you take the full federal research program effort, that we fund a minority of very small——

Mr. MURTHA. Less than fifty percent.

Dr. SMITH. Of basic research.

I can give you a little overview. There are about $6 billion that the Federal Government spends in basic research. About $2 billion of that is the National Institutes of Health, for medical-related research; about $1 billion of that is the National Science Foundation. The other $3 billion is everybody else, which is the Energy Department, the Department of Transportation, DOD, and so on. In basic research, DOD provides about ten percent of the total funding. You have to keep in perspective, however, in fields such as mathematics, or electronics, we may well be in the order of 30, 40, even to 50 percent investment. In oceanography, for example, the Navy is a 25 to 30 percent player depending upon the field, the DOD has more or less influence. In the field of medical research, DOD is hardly a player in terms of dollars.

RATIONALE FOR TECHNOLOGY BASE INCREASES

Mr. SERAPHIN. Dr. Cooper, I have here the 1981 Summer Study of the Defense Science Board. You were one of the authors of that report.

Dr. COOPER. Yes.

Mr. SERAPHIN. I quote: "The DSB summer study panel found no rationale for judging the total magnitude of the DOD technology base investment as too little or too much."

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Absent a rationale, how can you come forward with any particular number and defend it as being too high or too low? How do you know that seven percent is the right number? Why isn't 15? Why isn't it zero? Why not minus ten?

Dr. COOPER. You are asking me how the Defense Science Board came to that conclusion. The answer to that is very specific. The answer to that is they did not spend the time or effort to come to a conclusion about whether it was too large or too small. They found no reason in their study which was not specifically aimed at trying to determine that to be able to say whether it was too large or too small. That response was really specifically at my request for them to say something about that. They came to the conclusion that they had no basis; they had not studied the problem, no basis to come to any conclusion about that.

Mr. MURTHA. To simplify it, are you saying that they give you a figure and you are constrained by the figure that DOD gives you? That is what it amounts to basically? They say basically you can increase defense by X amount?

Dr. COOPER. No. Let me try to characterize the process which determines how much goes into the technology base as opposed to how much goes into our other accounts, the procurement accounts, the O&M accounts, the military construction accounts, and so on.

The allocation of overall defense spending is done through a competitive process which is reviewed by the Defense Resources Board. The Defense Resources Board is comprised of the Secretary of Defense, the Deputy Secretary of Defense, the principal OSD officers, the Secretaries of the Services, and the Chairman of the Joint Chiefs of Staff.

This august, very high level body listens to the proposals for Defense Guidance and makes judgments about the budget categories and how much funding should go into each category in order to support the guidance objectives which are believed to be necessary to support the national security interests.

By and large the issue in the Defense Resources Board with respect to Science and Technology is how can we get money out of there to buy systems, to buy tanks, to support more forces, to support O&M? So it is a very competitive process. We are in a position, a very highly competitive position in that forum. That is no different than the position that a corporate research laboratory finds itself in in this tight money environment that we have in competing for corporate profits in order to protect the long range interests of the corporation. It is in that forum where it is decided whether we will invest in this long-term technology activity.

Since this new proposed position has been created, the reason for that new Assistant Secretary position is to put a technologist, an advocate for the technology base on to the Defense Resources Board where he can provide the advocacy to protect the technology base against raids for O&M, for equipment, procurement, and so on. We need that, and that is why we request your support in creating this position and getting on with providing the advocacy needed. We are in a stress position to create the kind of technology required in the out years. It is in that forum where the decisions are made. We can always use more money. We can always use better technology in the 1990s. The question is, what about the in-

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vestment decision? How do you decide? You decide basically the way you decide how many tanks to buy, how many servicemen to support in the coming years. You decide on the threat and the opportunities. If the threat is great, then you want to increase the investment. If the opportunities are great, you may want to increase the investment.

It is my job—it would be my job as the Assistant Secretary to, in that forum, present the threat in terms of the technology threat of the future and the opportunities that we have to make investments that are really going to pay off in national security in the future.

Mr. MURTHA. So you are constrained by overall fiscal policy, but you increase it as much as you can percentagewise in order to take care of what you consider—to overcome a reasonable threat?

Dr. COOPER. Consistent with the threat and the opportunities that I see. I see the threat, as I pointed out in my opening remarks, as tremendous. The threat in the 1990s to this country by the forces arrayed against us, the numerical superiority alone is going to be tremendous. The technology level is going to be tremendous. So we do need to make these investments. We need to make them on the best understanding and intelligence we have of where the opposition is going to be at that time.

We also need to look at the opportunities. That is what are the emerging technologies that could really make a difference. It was in that study which Mr. Seraphin referred to that many of those technological opportunities were outlined; in creating the guidance for the 1983 budget we took those technological opportunities, estimated what the additional cost would be to invest in those technologies at the level we thought would be necessary to make those technologies available in the early nineties, and we added an amount in the budget which would cover those. That amount added up to the increase in real dollars which we put into the guidance, and at the same time we put into the guidance where we wanted the Services to consider making these investments.

Not only the increases that we recommended in the budget were available to fund those, but typically in a research environment, particularly in the 6.2 and 6.3 accounts, you find that about anywhere from ten to fifteen percent of the dollars that are in those accounts come available as new resources each year; that is, projects and programs terminate. So typically we reinvest those in these high payoff technologies.

Essentially that is how we establish the level. You have to realize we are in competition. We have opportunities and threats in exactly the same way that the system developers view their business and we make our investments as wisely as we can on those bases.

TECHNOLOGY BASE AS A PERCENTAGE OF TOTAL R&D

Dr. LASSER. Can I give you a service perspective on this? I know this question comes up a great deal. If we go back to 1965—all I am going to say has to be pretty well subjective. When we go back to 1965, we had about 20 percent of our R&D program dedicated to the technology base. Then the Vietnam situation came along and those numbers—those amounts of dollars for the more advanced work went down because of the pressures of Vietnam.

Mr. MURTHA. Did the overall money go up and the percentage go down?

Dr. LASSER. The actual dollars stayed about the same. The buying power went down and so the purchasing power clearly went down and the percentage went down. So everything went down except maybe the absolute level of dollars.

Dr. COOPER. It was about a fifty percent reduction over that period of time.

Dr. LASSER. So there is the feeling that that ratio of about 20 percent is the number to go for. As we talk about increases, as the service allocates increases for the technology base, I have heard the statement in time it will clearly take over.

The intent is not to have it grow indefinitely. It is to grow to a reasonable level. The reasonable level subjectively is about 20 percent. I want to expand also on what Dr. Cooper said before. We see a number of technological opportunities, things that industry is coming out with, the microelectronics field. So we are investing more money into that; not only redirecting 6.1 and 6.2, but putting more money into 6.3A. What you do in the 6.3 programs is try to work with what you have in the competitive environment that we have. What is the competitive environment? The competition for systems. So I think it is an adversarial relationship, but I think it is a healthy adversarial relationship.

We argue for what our technology should do. We get our user to accept what it is we are making; and so it really is not a perfunctory amount of percentage increase although it is given as general guidance. That comes down as general guidance. It assists us in the arguments. That is about all it does.

Mr. MURTHA. So the spending during the Vietnam War for systems escalated substantially, as it would in any war?

Dr. LASSER. Yes.

Mr. MURTHA. But research declined in real dollars by 50 percent?

Dr. LASSER. Over that period, yes, sir.

Mr. MURTHA. During a ten-year period?

Dr. COOPER. It was from 1965 until 1975, roughly 1974.

Mr. MURTHA. 1965 to 1974?

Dr. COOPER. Yes.

Mr. MURTHA. You are now back at the appropriate percentage at this point?

Dr. COOPER. No.

Dr. LASSER. No, sir, we are not.

Mr. MURTHA. How long will it be before you are at the appropriate percentage?

Dr. COOPER. At the current rate—and I have the chart that has this graph on it in my mind—I suspect it will be 1990.

Mr. MURTHA. How much money would you need in research to get to the appropriate percentage this year?

Dr. COOPER. We would need about a—let me see if I can find the chart that does that.

Mr. MURTHA. If we have been behind for ten years, it would seem you need a substantial increase to get back where we need to be. I realize that you are saying a steady increase is more efficient.

ARMY TECHNOLOGY BASE FUNDING

Dr. LASSER. Let me give you the Army's number. We are now at about 15 percent—and I can't do the fast arithmetic. It is $700 million. We need another five percent of that to get up to that level.

Mr. MURTHA. You see, when you say a figure of 20 percent, that bothers me. You always have systems which in wartime, for instance, which are a lot more expensive. So the percentage figure doesn't necessarily sell with me. You have got to have a figure which relates to something besides percentage of the overall system, particularly when you are increasing defense substantially.

Dr. LASSER. I agree. I was really trying to ask in sort of a mechanical way what would that number be. It would be about $200 million, but——

Mr. MURTHA. For the Army?

Dr. LASSER. For the Army. But it is a continual adversarial discussion. It is not a good idea to increase that in any given year. I think it would be a mistake to say 20 percent.

Mr. MURTHA. In other words, if we gave you $200 million in the Army this year——

Dr. COOPER. That would be a bad management approach.

Mr. MURTHA. You would not be able to spend it efficiently this year?

Dr. LASSER. That is right.

Mr. MURTHA. What amount would you be able to spend above what you have asked for efficiently?

Dr. LASSER. I would say in the Army instead of having 3, 4, 7 percent growth, we could stand a 10, 15 percent growth. As everyone described to you, what we have are a series of prioritized programs. We can't fund all that we have on the list; but we fund the highest ones.

Mr. MURTHA. You are discounting the ten years when you didn't have enough money. What I am trying to do is get to a level of funding that helps to alleviate what Dr. Cooper says will be a critical problem down the road. I am concerned about that critical problem. What I am asking is how do we get to it faster? We make the decisions on priorities over here, as you know. You recommend them, we make them.

Dr. LASSER. Let me give you an experimental fact, if I can use that terminology. An experimental fact is, we put money into the budget every year that gives us a reasonable growth of seven to ten percent. By the time—and I am not addressing this to the Congress—by the time the process ends, that growth goes away. What happens as a result? Our percentage stays flat. So if I look at the Army's percentage numbers for 1981, it is 16.3 percent; 1982, 16.3 percent; 1983, 15.6 percent. So it is going the wrong way.

Mr. MURTHA. You see, I am not interested in the percentage. I don't agree that that is the way to measure it. I believe since defense has increased so substantially that the percentage of the whole does not necessarily give me what I am looking for. I am looking for a figure that will get us to less threat in ten years.

PAST TECHNOLOGY BASE FUNDING

Dr. COOPER. Let me respond in the following way: I can't find the chart in my book here right now. I will provide the chart for the record which shows you in constant dollars, that is in buying power, what has happened to the technology base resources in the years that I mentioned from 1965 through the present, but particularly through that period where it was declining through 1975.

[The chart follows:]

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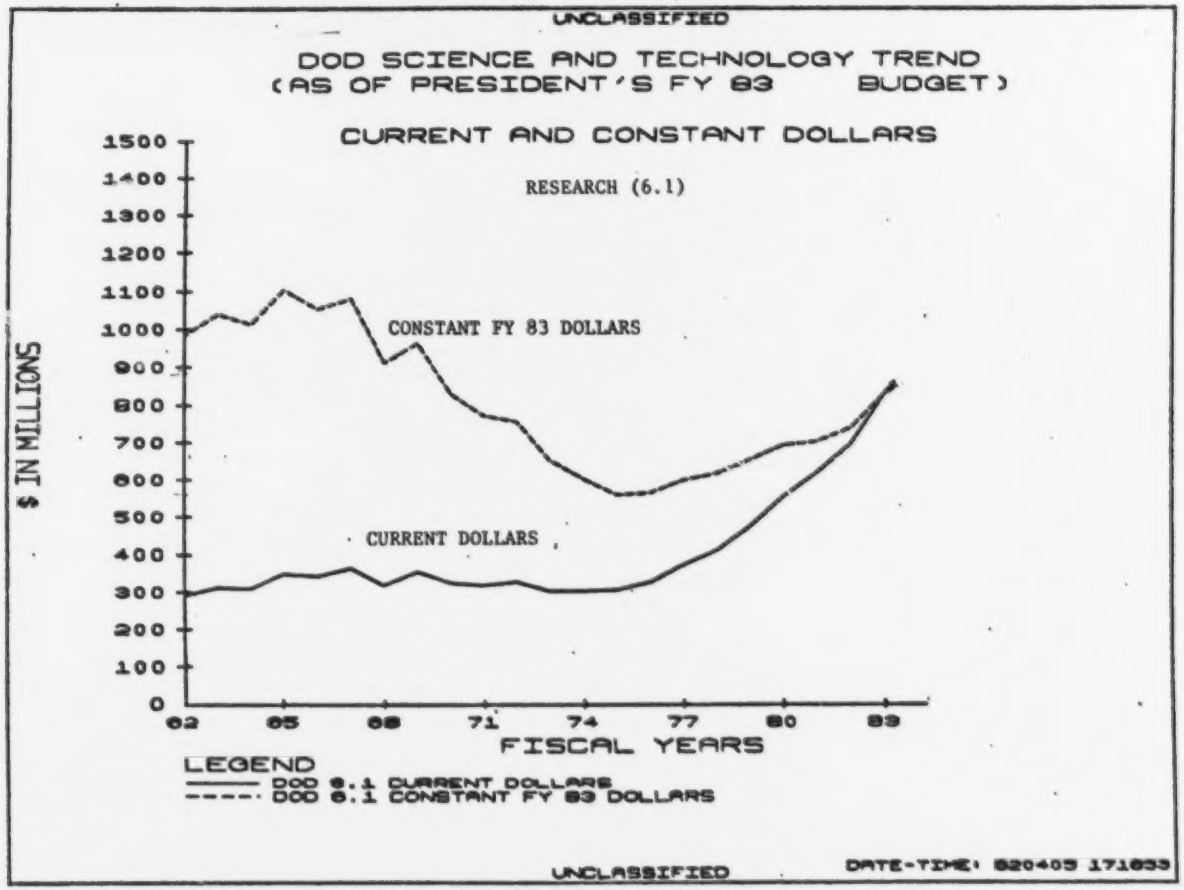

When I came on board last fall, I sat down with the senior management and we looked at what the recent past experience was. Everyone recognized that we were mortgaging the future to pay for the present. So we recognized that we would have to stimulate growth in this budget—in these budget accounts in order to be able to be competitive with the Soviets in the nineties. The question was, how to do that rationally. We could do it and mandate it in one year, as you proposed, just jump up to the right level and spend at that level out into the indefinite future; but we felt that there was not the management infrastructure nor was there the planning and programming required to support that kind of thing. We felt that that would be an irresponsible management activity.

So we asked ourselves what growth rate could we actually achieve, getting back toward that expenditure level which we know intuitively from the opportunities and the threat is the right level. We convinced ourselves that somewhere between ten or fifteen percent real growth per year would get us back by the latter part of the 1980s to a level which would keep us competitive with the Soviets.

Mr. MURTHA. So that is 10 or 15 percent not of the whole, but increased from where you are?

Dr. COOPER. In those budget accounts only. That has nothing to do with the defense appropriation or authorization as a whole. It is at the level of what we think the investments need to be made to meet the threat and to capitalize on the opportunities available to us to provide for our needs.

Mr. MURTHA. There is a big difference betwen 10 and 15 percent. You don't have the 10. You only have a seven.

Dr. COOPER. That is right. Let me tell you what happened after that. In the process which I described to you in the Defense Resources Board, we started at 15 percent. We went to ten percent. We went to minus three percent; and then by agreement between myself and the Deputy Secretary of Defense, we went to seven percent. The forces on that process that were driving us down were the forces of the demand for new strategic modernization, the demand for O&M, the demand for funds to be able to make multiyear procurements which requires up front money, things of this sort.

So we were in a competitive environment. We did the best we could. We ended up at seven percent real growth. My objective in this budget cycle and all through the fiscal year 1983 budget year is to maintain that by appeals to you in Congress to support that, by diligence in looking at the programs that the Service people provide to us, and then diligence in assuring that they actually spend the money and they do it in the areas where we know the high payoff exists.

Mr. MURTHA. Let's take the 15 percent figure. When does that get you to a point of less threat? I realize this is a subjective thing, but when would that alleviate the problem?

Dr. COOPER. We started out with an original goal of getting to that appropriate level of expenditure in the FYDP period. Now our goal really would put us there at the end of the decade. We had to back off. It is because of the pressures in relationship to the other budget accounts.

We think this is a reasonable compromise we have made.

CURRENT ECONOMIC PROBLEMS

Mr. MURTHA. Here is the fallacy to your thinking. I said last year to the Secretary of Defense, "Mr. Secretary, if we don't delay the tax cut or find additional revenues some place, defense is going to be cut." He believed the President's program would work. We hoped it would work. It didn't bring in the revenues we expected, so defense will be cut. It is not going to be cut drastically, but it will be cut.

Next year there will be more pressure, if the economy doesn't turn around, to cut defense. This is where the pressure is going to be because it is easier to sell a cut in defense research. In energy, for instance, they are cutting $900 million out of energy research, which will be disastrous for the long-term future of this country, but a short-term gain.

What I am concerned about is, you say we are not even at a reasonable level now and so we are buying short-term systems and mortgaging our future. But if you don't get 15 percent this year, you will be lucky to stay even next year, the way I see it, unless things turn around. I don't see them turning around. I am concerned about this direction we are going from the way you have laid it out.

Bob?

DARPA'S BASIC RESEARCH BUDGET

Mr. SERAPHIN. Dr. Cooper, I am confused about something. DARPA is requesting $112 million for basic research this year. That is a 23 percent increase over last year. Our information is that the percentage increase in 1984 over the 1983 request will be 29 percent. That doesn't seem to square with your statements concerning negotiations over minus three percent and plus 7 percent growth in the technology base.

Dr. COOPER. Well, there are investment areas—that is programs in the Service areas and in the defense agencies—there are specific program areas where we are making heavy investments. Locally you may see large excursions from the Defense Guidance, but overall I think we are looking at a major program, so overall I think our goal is realistic.

Mr. SERAPHIN. So if DARPA's basic research budget is going up at these rather large percentages, it means that other areas are going up at less than the average percentage, is that correct?

Dr. COOPER. In some program areas, that is true. The particular reason for this increase has to do with a particular defense need and a particular opportunity which we see today. Currently the microelectronics industry is entirely silicon-based. That is, they developed silicon technology to a tremendous degree. We have invested a good deal of money in the past couple of years in the VHSIC program to drive the complexity of microelectronics up for defense purposes by driving the features down to one micron from the three to five microns that is widely used in the industry today. The major problem with that is these microelectronic circuits based on silicon are not resistant to nuclear radiation. Defense has a partic-

ular need for microelectronic circuits that are resistant to nuclear radiation.

The principal opportunity we have available to us now which was opened up to us because of investments in gallium arsinide over the last three or four years are to drive gallium arsinide technology to the point that silicon technology is today in three years. In order to do that, we have to establish three pilot lines, three pilot production lines that can produce gallium arsinide circuitry at production levels which would allow us to develop the production techniques to support those lines.

That is going to be an expensive process. It is experimentation at the 6.2 level, and it will be supported in our defense sciences organization. It is an expensive process, but it represents an opportunity to capitalize on a technological area that we have developed and to provide a much needed capability, particularly for space systems in the latter part of the 1980s.

We decided as a research investment to make that investment and we are going to go ahead with that if the Congress agrees to the increases.

It just happens that that program is DARPA, but if it were in any other of the Service accounts or in any of the other defense agencies, you would see the appropriation showing up there and it could provide a large perturbation in the increase.

Mr. MURTHA. Of course, Bob's point is, if you have an increase—and I don't know what percentage this is of your overall budget—but if you have a substantial increase in DARPA, you obviously have to have less of an increase some place else.

Dr. COOPER. That is correct.

Mr. MURTHA. What I would like to see for the record is a chart which shows us your budget so we get some indication of what this increase overall has been and also I would like to see the dollar figure of what 15 percent would be in dollars and then what that would mean, and you have already said it would reduce the amount of time by half that it would take us to alleviate the threat.

Dr. COOPER. Roughly.

Mr. GROVE. That is assuming the system outside is elastic enough to be able to absorb that readily too.

Mr. MURTHA. That is what you originally requested. Your original goal was to have a 15 percent increase. Did you come to the conclusion that you couldn't absorb 15 percent, or did you come to the conclusion that you couldn't get 15 percent from DOD?

Dr. COOPER. We came to the conclusion that for a number of reasons, part management reasons, part competition for resources, that a good compromise position would be between 7 and 10 percent. Seven percent was what we got agreement on from the Defense Resources Board.

Mr. MURTHA. Let me put it another way. What I would like to see is the figure that you could spend efficiently. That is what I would like to see. If that is ten percent, fine. Don't talk about the competition for money within the Defense Department. I would like to see what that would be, because there is going to be real juggling of defense figures this year. Yet I would hate to see this

area not only not cut—this may be one area where we may want to increase the money.

Dr. COOPER. We can certainly supply you with the current dollar figures and what the dollar figures would be with a ten percent rather than a seven percent increase.

[The information follows:]

The following information is submitted relative to the technology base budget (dollars in millions):

Technology base: fiscal year 1983 request, $3,337; 10 percent real growth, $3,389.

Mr. MURTHA. Or if ten percent isn't the figure, whatever the figure that you could spend efficiently. If it is not seven percent, then eight, nine, ten, whatever that figure might be.

Obviously there may be a level where you can't spend it efficiently. We aren't interested in that. I am not interested in that number.

Dr. COOPER. OK.

Mr. MURTHA. Let me go up and vote.

[Recess.]

Mr. MURTHA. Obviously in addition to just the figures, let me see what this means, that additional money, where it would put us. It is important to me when the rest of the members are here, as we go through these hearings, to know what this extra three percent and whatever the percentage is that you come up with would mean to the overall defense research objectives.

Dr. COOPER. Fine.

[The information follows:]

The Department recommends that the President's budget, as submitted, be approved. We believe the amounts requested represent the correct balance between various programs in the Defense fiscal year 1983 budget. Any additional funds would be allocated largely to the technologies recommended by the DSB in their summer study. Your Committee has been provided a copy of the report.

LINKING RESEARCH TO FUTURE REQUIREMENTS

Mr. MURTHA. In the summer of 1981 a study was made of the technology base by the Defense Sciences Board. The resulting report identified a large number of serious problem areas, and made recommendations for improvement. One major conclusion was that there is no consistent DOD-wide linkage between investment strategies and the requirements of future combat. If such a linkage is unclear, what exactly is it that we are paying for?

Dr. COOPER. Let me respond to that. It is true one of the issues studied in that study was the question of what links the operational requirements to the research base and how well are we doing at making that linkage in each of the services. The study did conclude that in each of the Services there was a mechanism to do that. That is, in each of the services there was a regular process which was carried out each year which tried to make that linkage and which tried to influence the defense research programs so they would have the maximum benefit in terms of payoff against our prospective needs for the future.

The broad conclusion that was drawn there, though, was that it was not uniform; that is in some Services, the process was done in one way; in another Service, it was done in an entirely different

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way, and that there was not uniformity in effectiveness of the process. So the recommendations that were made there were for research and engineering to try and coordinate that process, see if more uniformity could be put into it, and consequently raise up the less effective of the techniques that were being used and try to use some of the benefits of the techniques that were being used that were most effective.

So we have started the process of applying the principles that were established in that study to the process of connecting the requirements generation to the technology base. I am actually chairing a defense-wide committee which is attacking that problem and where we will be placing some uniformity into this process.

Mr. MURTHA. Please answer the other questions on this subject for the record.

[CLERK'S NOTE.—The questions submitted by Mr. Murtha and the answers thereto follow:]

DSB STUDY OF THE TECHNOLOGY BASE

Question. If such a linkage is unclear, what exactly is it that we are paying for? How does DOD reasonably justify "real growth" in the technology base (or, indeed, spending anything at all on a technology base) if that technology is not clearly linked to future requirements?

Answer. The word requirement is normally linked to the R&D's process once a specific operational need is established and a program is directed at equipment or systems oriented toward meeting that need. The technology base goals and objectives occur prior to the formal requirements process and provide the necessary technology options for meeting that need. For example, the technology base is now working on the fundamental science, techniques, etc., that will be used in equipment in the late 80s or early 90s. The report stressed mainly the need for improving the process for managing Advanced Technology Developments, which are technically not a part of the technology base, where the linkage to military users can and should be closely identified with a potential application.

Question. Describe briefly the major conclusions of the study.

Answer. The major conclusions of the study are as follows:

There was no major consistent, DOD-wide linkage between investment strategy and the requirements of future combat.

A number of barriers exist that inhibit the successful transition of technology into systems.

The university research base related to defense preparedness is in need of upgrading in faculty, equipment and research support.

There is a strong need for DOD laboratories but improvements in efficiency and effectiveness are required.

Question. Describe briefly the recommendations made as a result of the study.

Answer. The following major recommendations were made in the report:

That scenario based planning and an improved prioritizing system be adopted. Technologies, which in their view could make a difference, were identified.

That DOD require technology insertion plans as a part of program planning.

That DOD related university equipment, facilities, procurement practices and research support be increased, improved, or upgraded.

That the NOSC/NWC personnel plan be implemented; that the use of lead laboratories be increased; and that procedures for coordinating large DARPA programs be improved.

Question. What specifically are your plans to implement those recommendations?

Answer. We are working on those recommendations which contain high merit. A staff member is now assigned full time on technology insertion; scenario based planning has been initiated; technologies recommended are being considered in program formulation; programs for university fellowships, equipment upgrading and increased research are underway; the NOSC/NWC personnel program is being evaluated; and, our staff is using the evaluation procedure recommended. In addition, the Independent Laboratory Review Group was commissioned and the Laboratory Management Task Force continues to address personnel equipment, facilities, and procurement issues.

[CLERK'S NOTE: End of questions submitted by Mr. Murtha.]

Dr. COOPER. Typical of the process is the Air Force's vanguard process.

Dr. WILLIAMS. As indicated, I guess, we have a rather extensive process that goes on at our primary development command to provide a very clear linkage between the using commands and our developing commands. It is titled Vanguard. It is our major planning process. It attempts to look out into the future, determine our system capability, determine deficiencies that we may have in those systems capabilities, to evaluate those systems against the threat, and then to prioritize all our development programs against that kind of background. We attempt to link the technology programs, 6.1, 6.2, and 6.3 with that process as much as possible.

The emphasis in the past, however, has been somewhat near term and we recognize that we can make improvements in that area. Some of the internal studies going on in the Air Force now have recognized that and are setting up processes similar to what the Defense Science Board calls scenario-based planning to make the linkage even clearer.

I think there are two problems here. One is whether the linkage exists or not, the second one is whether it is clear that it exists. I think there is a clear linkage in the Air Force. I think it can stand some improvement. We are in the process now of implementing some techniques that will let us look even further out into the future and link the technology activities to the user requirements. That is basically it.

Dr. LASSER. May I give another Service point of view?

We have generated a whole new concept of operations. We call it the Air-Land 2000, or how is it we are going to operate in the year 2000. That has been an iterative process between the technologists and the users. Out of that has come a plan for an entirely new mode of operation. We have developed a program that builds on that. The concept calls for light, agile forces being able to fight sep-

arated, being able to mass as appropriate, being able to stay in touch with each other, but separated.

It is another way of saying the U.S. has a technological lead. We have gone in the U.S. from an agrarian to industrial to information society. We are going that way rapidly. The ability to handle information, the ability to get information where it is needed, when it is needed is a capability the country has. What we are doing now is building our concepts of operations on that and developing the technologies to satisfy those needs.

I think this fits under the heading of scenario-based planning, but I want to expand on what we mean by the word. It is not as sterile as perhaps it sounds. We have a number of concepts of operations. We have redirected our fiscal year 1983 program, our Congressional testimony by the Assistant Secretary and by General Merrma.., to indicate we have changed our direction of technology or emphasis, put additional emphasis, concentrate in a limited number of areas. There were certain national areas of capability we can build on. That is what we are doing.

DUPLICATION OF BASIC RESEARCH

Mr. MURTHA. How much duplication do you have, then, of effort in the various services? Duplication of basic research, for instance?

Dr. COOPER. I would say if you characterize basic research as those fundamental disciplines which can serve a wide variety of potential applications, such as materials science, electronic sciences, the information sciences, some of the more basic technological applications of it, we have programs in each of the Services and in the Defense Agencies in these areas.

In those cases where we have basic research programs in the same area, we generally have a system of committees and staff functions which coordinate the activity so that specific activities are not duplicated unless we specifically choose that they be duplicated for reasons of differences of approach and so on.

Mr. MURTHA. How often do they meet to coordinate the activities?

Dr. COOPER. It depends upon the specific committee and the particular programs. Typically, for instance, the AGED—Advisory Group on Electron Devices may meet——

Mr. GROVE. From monthly, quarterly, annually in some cases.

Dr. LASSER. I think there is also a problem of just titles. For example, there is the feeling there is duplication in mathematical research, but the mathematical research is directed in different directions. The Army could—spends a lot of mathematics research on ballistics mathematics. The Air Force gets more into spatial mathematics. Just looking at the word "mathematics" and saying we are both doing it doesn't look at the detail. Not only are they coordinated, and—because no researcher wants to do what someone else is doing. It is just his whole psychology to be out front.

Mr. MURTHA. The point is, it is closely enough coordinated that if there is a duplication, it has a point to it?

Dr. COOPER. That is correct.

Dr. LASSER. That is right. It is always by design.

QUALITY OF IN-HOUSE LABORATORIES

Mr. MURTHA. Let me ask about quality of in-house laboratories. About $2 billion is spent annually on DOD's 73 service-managed laboratories. For the past several years DOD and the services have issued various reports which complain that these in-house laboratories are for the most part housed inadequately, that their equipment is largely obsolete, and that they are having great difficulty in attracting and retaining qualified personnel. What kind of contributions can we expect from outdated facilities which are inadequately staffed, and which contain obsolete equipment?

Mr. GROVE. The assertion that the labs were in that situation gave rise to the Herman study of the laboratories, an independent review of the R&D laboratories for the Under Secretary. He found that in some cases that is indeed true and made some specific recommendations as to how we can go about solving those problems. I suppose they found despite that allegation that there is still some problems—a lot of good work that goes on in the laboratories and that there remains a strong and continuing need for those DOD laboratories.

Mr. MURTHA. That is a pretty broad criticism though. Are you accepting that as a fact?

Mr. GROVE. No. I don't accept that as a fact absolutely.

Mr. MURTHA. What did the Herman study determine?

Mr. GROVE. They pretty much agree there are instances where laboratories are in sad repair, much as in the case of our universities. It is not a universal observation.

Mr. LASSER. I think the general observation—I just want to add this: I didn't want the wrong impression coming across.

Dr. Herman strongly supported the laboratory system. He says the laboratories do make contributions. Then he talked about the fact that because of the shortage of funds, because of the limited amount of salaries that the government can provide, that they are, if you will, on a negative slope, that needs to be turned around. It does not mean that they are obsolete or useless. It means they are going in the wrong direction and we need to do something about that.

DIFFERING OPINIONS ON IN-HOUSE LABORATORIES

Mr. SERAPHIN. Dr. Lasser, could you address the recommendation of the summer study which concluded that "major gains could be had by reduction of in-house execution of basic research?"

That seems to be mutually exclusive with what the Herman study is saying, which is: pump these guys up, give them a lot more money, dump a lot of equipment in there.

Dr. COOPER. May I respond to that? I think the intention of that recommendation was to do less basic research, that is 6.1 oriented research in the laboratories and to shift that research both into industry and more into the universities. Now, there is a trend in that direction anyway. We asked Bob Herman specifically to look at the structure of the research programs in the laboratories and to see if there was an opportunity to change our investment strategy there.

The general conclusions that he came back with were that the balance was about right in his judgment and in the judgment of

the folks who worked with him, and that it would be inappropriate to drastically reduce the basic research programs in the laboratories. So there is a differing opinion on that score.

PLAN TO IMPROVE IN-HOUSE LABORATORIES

Mr. MURTHA. Is there a program then? I know this is only a March study, that it has just been completed, but is there a program to upgrade the laboratories you are going to keep and close some that you are not interested in?

Dr. COOPER. There is a program that we are putting in place. Perhaps Mark could tell you a little bit more about it to improve the overall quality of the Defense laboratories.

Mr. GROVE. It is only in its formative stages. The task force has only met once or twice to look at that. Clearly we do not have objectives at this point of specific laboratories that need to be closed or whether indeed some should, but that will be a part of that investigation.

Mr. MURTHA. When do you think you will finish your evaluation of the study?

Mr. GROVE. My estimate is that at least a milestone will be met that will be reportable sometime in the early to mid-fall. We had targeted for about the first of August, but that does not seem to be realistic.

Mr. MURTHA. We can look for recommendations for changes in next year's budget?

Mr. GROVE. Certainly observations and hopefully recommendations, yes.

STUDIES—PAST AND PRESENT

Mr. SERAPHIN. Mr. Cooper, do you hold great hope for the results of the 1981 summer study?

Dr. COOPER. I think——

Mr. SERAPHIN. It sounds as though we are hanging our hat on a lot of the ideas in here.

Dr. COOPER. I think many of the recommendations in the summer study hit the nail right on the head. There are some of them that I question the validity of and probably will take no action on, but I think by and large the preponderance of the conclusions that study drew are valid conclusions and we can take directions that are similar to the directions recommended there in many cases.

Mr. SERAPHIN. You hope it will not meet the fate of previous studies?

I quote from your summer study,

> Over the last decade there have been literally dozens of reports, study panels, and blue ribbon committees dedicated either directly or indirectly to the problems of the technology base. Generally speaking, the recommendations made in a majority of these efforts have largely been ignored by DOD institutionally.

You are not going to let that happen with this one?

Dr. COOPER. We are certainly working to try to institute many of the recommendations there. You know that the research community is slow to respond and react to management approaches, management directives; but I think that we can keep the pressure on

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and we can implement many of the suggestions and recommendations there. I am confident. I think that in particular, if the Congress will agree to the management changes that Dr. DeLauer has recommended, that that will help the process because it will allow us to work as a corporate body, as a group of senior level managers who are working closely together to try to accomplish the objectives there. I think we all agree that the objectives that—many of the objectives set out in that study are worthwhile and we should do our best to try to work in those directions.

Mr. SERAPHIN. The farthest back I have been able to go was a study issued in 1963 which complained of inertia and resistance to change in the DOD laboratories.

Dr. COOPER. Yes.

Mr. MURTHA. I am glad that that no longer exists with the new director.

Mr. SERAPHIN. I agree, Mr. Chairman.

Mr. MURTHA. Mr. Cooper, that is all I have.

Mr. Chappell?

Mr. CHAPPELL. I have no questions, Mr. Chairman.

Mr. MURTHA. It was an excellent presentation, very frank. We appreciate it. If you would answer the balance of the questions for the record, Mr. Cooper, we would appreciate it.

[CLERK'S NOTE.—The questions submitted by Mr. Murtha and the answers thereto follow:]

OVERVIEW OF THE TECHNOLOGY BASE

Question. In order to place in perspective those efforts which comprise the Technology Base, please expand for the record, on the following points.

What is the Technology Base? What sort of activities does it encompass?

Answer. The Technology Base is composed of DOD programs in Research (6.1) and Exploratory Development (6.2). Research fills gaps in knowledge in order to solve many technological problems, is a source of new concepts that lead to major changes in operational capability, and a source of insight for policymakers who must evaluate and react to technological developments. Our Research efforts in the Services are managed by the Army Research Office (ARO), the Office of Naval Research (ONR) and the Air Force Office of Scientific Research. The efforts are categorized by discipline: Physics, radiation sciences, astronomy and astrophysics; Mechanics and energy conversion; Materials; Electronics; Oceanography; Biology and medical sciences; Chemistry; Mathematics and computer sciences; Terrestrial sciences; Atmospheric sciences; Behavioral sciences; and Aeronautical sciences.

The Exploratory Development activities also tend to be categorized by discipline, but with more attention given to the military application. The most essential function is to provide the technological infrastructure which is so important for the steady, evolutionary growth of our military capabilities. It must be comprehensive and diversified enough to maintain our technological supremacy and lead time. It must also provide the ability to recognize and capitalize on revolutionary technological developments. Among the

areas covered by the program are: Combat vehicles, munitions and guided weapons, directed energy technology, electronics, informational and life sciences, and materials and structures.

Question. Why does DOD need to have these activities performed?

Answer. A basic policy decision has been made not to attempt to match the Soviets and the Warsaw Bloc weapon-for-weapon or soldier-for-soldier. Instead we have relied on superior technology to give us the necessary military advantage. Short of mobilization, we probably cannot man a force which attempts to match the Soviets' materiel. Hence it is essential that we maintain a strong, viable, vigorous Technology Base Program.

The Soviets have an overall RDT&E effort about twice ours. It is not possible to break down our assessment of their program to give a meaningful comparison of the relative size of their Tech Base Program. Where we can (high-energy lasers, for example), we find their efforts are much larger than ours. Without a substantial Tech Base Program, we would be extremely vulnerable to unexpected technological developments by the Soviets.

Question. Who performs these activities?

Answer. The activities are performed by industry, universities and the DOD in-house laboratories.

Question. How, and by whom, are these activities managed?

Answer. The activities are managed by the three Military Services under the policy and guidance oversight of my office. Each Service manages its Tech Base Program slightly differently but basically each has a central staff with the bulk of the day-to-day management delegated to the in-house laboratories.

Question. How much is being spent by DOD on Technology Base efforts in fiscal year 1982? How much is the budget for fiscal year 1983?

Answer. The fiscal year 1982 budget is $2,907 million. The fiscal year 1983 budget request is $3,337 million.

Question. Of these sums, what percentages go to: in-house laboratories; universities; private sector laboratories; and, federal contract research centers?

Answer. The percentages are not easily obtained since we do not audit our program in that manner. The estimated breakout is:

	Percent
In-house DOD laboratories	34
Universities	14
Private sector	52

Federal Contract Research Centers do not play a major role in the performance of the Technology Base (6.1+6.2).

Question. How many persons are engaged in performing Technology Base activities? How many in managing those activities?

Answer. We do not have such information available. In the Government we have a total DOD laboratory population of about 59,000 workers, of whom 27,000 are professionals. It has been estimated that about 45 percent of this population works on Technology Base activities.

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PROBLEMS GENERATED BY HIGH TECHNOLOGY

Question. Last September, Dr. DeLauer directed a review of DOD laboratories. The resulting report, titled "USDRE Independent Review of DOD Laboratories", was issued on March 22. It finds a number of problems, and makes a series of recommendations to address those problems.

Perhaps the most revealing discussion in this report, and one which relates not only to DOD laboratories, but to the entire Technology Base, is entitled "There is a Disconnect Between the Laboratories and the Operating Forces." Some points in that discussion:

> We have been ineffective at both translating technology into a fielded system and adopting operational doctrine and concepts to take advantage of modern technologies and techniques.
>
> We have now suffered many years of the consequences of fielding complex modern systems based on high technology and design rules driven by technical performance.
>
> There has been a systematic disregard of affordability, reliability, maintainability, and logistics supportability.

Anyone reading these words will find in them an indictment of the entire course which DOD has been following, and which this Committee has been strongly questioning, for years.

Are our forces, on balance, now worse off, rather than better, because of misguided applications of high technology—applications which bring in their wake severe problems with affordability, reliability, maintainability, and supportability?

Answer. Applications of high technology are very seldom if ever misguided. The Soviets and their allies outnumber the United States and our allies in almost every category of weapons and military manpower. Unless we and our allies wish to mobilize our armed forces to levels unprecedented in peacetime for free and democratic societies, we must continue to rely on our superior technology to offset the Soviet numerical advantage in military equipment and manpower. Usually technology can be applied in ways which will reduce costs and increase reliability, maintainability, and supportability. Successes in the Mid East of American military equipment gives the most recent assurance that our decision to depend on technologically superior equipment is still viable. Certainly the costs of buying and operating a significantly larger number of tanks and other equipment would be much higher than our approach.

Question. In retrospect, would the Services now be better off if far less money and effort had been devoted to the Technology Base? Does not the proliferation of technology inevitably produce pressure to use that technology, regardless of cost or consequence?

Answer. In retrospect, the United States would be in an inevitable position of markedly military inferiority with respect to the Soviet Union if it were not for our vastly superior technology. If anything, our military advantage has been sharply reduced in part because of the almost 50-percent reduction in technology base funding, in constant year dollars, which occurred between 1965 and 1975. If we do not redress this lack of support to our military technology, we may well find ourselves in a future position which will seriously jeopardize our national security and well being.

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Question. Nevertheless, DOD continues to request increasing amounts for Technology Base, to advocate ever more exotic technologies, and to call for more resources for its laboratories. Why do you want to follow the same path that has already led to such serious problems?

Answer. The Department of Defense does not agree that development of superior technology has led to or leads to serious problems. Those who believe that our current problems are serious, should consider what the situation would be if we were technologically as well as numerically inferior to the Soviet Union. I doubt that our citizens would care to attempt to live in a world which would result from such a posture of weakness and inferiority. Our military technology today is unequalled anywhere in the world. It is the cornerstone of our military prowess and the envy of every nation in the world. The difficulty in applying new technologies to systems is not the creation of new technology but rather the premature use of the new capability in the acquisition process. We are taking strong action to improve the process by which technology is transitioned to operational systems.

Question. What would DOD stand to lose, and what would it stand to gain, if Technology Base funding were drastically curtailed? Would that force, for example, a weeding out of "technology for technology's sake," and a concentration on genuine need?

Answer. We do not agree that we are doing technology for technology's sake. If the Technology Base funding were drastically reduced, the DOD and the Nation would lose, in a few to several years, the technological lead we now enjoy over the Soviets in most areas of military technology. The result would be markedly inferior military forces. The United States would then be open to threats, coercion and blackmail from the Soviet Union. We are now paying the penalty for squandering our vast technological lead of the early sixties by permitting the real effort in the Technology Base to be reduced to half that level. Every effort is made to concentrate the resources provided for the Technology Base Program to genuine needs. Our success can be measured by the demand for our technology from other countries and on the unprecedented efforts by the Soviets to obtain it in any way possible.

SOVIET R.D.T. & E.

Question. Mr. Grove, the first page of your statement says that you intend to describe "how we view the threat represented by the very large Soviet RDT&E effort." Nowhere in the succeeding 45 pages is that again mentioned.

Please describe that threat, both qualitatively and quantitatively.

Answer. ———. It is evident that the Soviets have a very large RDT&E effort and that it has been growing steadily, as the table below indicates. It should also be remembered that RDT&E and other comparisons are important because a prolonged disparity in military investment leads eventually to disparities in fielded military capabilities.

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UNITED STATES/U.S.S.R. R.D.T. & E.

[Estimated 1980 dollar expenditures in billions]

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
United States	16	16	16	16	15	14	14	14	14	15	16	16
U.S.S.R.[1]												

[1] Deleted

Question. When speaking of R&D, is bigger necessarily better? Do larger efforts also carry the possibilities of more duplication, and of more false starts?

Answer. Larger efforts often permit constructive and effective duplication. Research by its very nature cannot be made "efficient" without destroying its effectiveness. We have levels of duplication now which are as low as reasonable management efforts can achieve, and in many cases the levels of duplicate paths and approaches are inadequate to maintain a technology lead over the Soviets. False starts are sometimes wasteful, although almost never predictable, and usually valuable in identifying, for small costs, areas where we do not need to spend dollars or other resources.

Question. Have you any measures of the relative cost-effectiveness of United States and of Soviet R&D efforts?

Answer. It is difficult to achieve useful and timely measures of cost effectiveness for any research program, let alone ones which would compare United States and Soviet R&D efforts. Based on past performance, our system is more cost-effective than the Soviet system.

Question. Is the Soviet Union dependent to an appreciable extent on Western technology? In general, is United States or Soviet R&D of better caliber?

Answer. The Soviet Union is dependent to an appreciable extent on Western Technology in certain areas such as microelectronics, software, computers, sensors and some areas of materials. In other areas such as nuclear weapons and welding they lead the U.S. technology. In most technical areas the U.S. R&D efforts are of higher caliber, in the judgment of the DOD.

GROWTH IN TECHNOLOGY BASE BUDGET

Question. Budgeting for the Technology Base appears not to follow the same course as other parts of DOD's activities. Usually the tasks needed to reach a goal are determined, the cost of each task estimated, and a summation of those costs yields a total budget request for a program. The indications are that the budget request for a program is derived by asking for "last year's request plus ten (or fifteen or twenty) percent." This view appears to be supported by DOD statements that real growth in the Technology Base is a specific objective.

Is it true that a predetermined percentage increase is being used each year in setting the budget request for the Technology Base?

Answer. As explained above, the general direction of the Tech Base budget is based on relatively detailed analyses and discussions of the level of effort needed. This is usually (but not always) expressed as a percentage change in the Services' Tech Base pro-

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grams for clarity and ease of communication. This is considered appropriate because most of the Tech Base programs are level of effort ones. The final budget is, of course, adjusted by the OSD staff.

Question. How does DOD know that the Technology Base needs real growth? What evidence is there that maintaining the Technology Base in a steady state is inadequate?

Answer. Many of the same investigations and comparisons of our military standing vis-a-vis that of the Soviets which have resulted in an increase in our overall defense budget also clearly indicate that an increase in the Tech Base is needed. The primary reason we cannot maintain the Tech Base in a steady state is that our adversaries are greatly increasing their efforts in technology. Since we depend on our superior technology to offset their superior numbers of weapons and soldiers, any narrowing of the technology lead we now enjoy could either require much larger expenditures for weapons and manpower or result in a significant reduction in our military security.

Question. Indeed, the argument can be made that an expanding Technology Base is, from a military viewpoint, counterproductive because it can yield a larger number of seemingly useful options which, on closer examination, are infeasible, and which, therefore, dilute time and effort. How do you respond?

Answer. It is just as important to demonstrate that certain technological options are infeasible as to develop those that are feasible. For one thing, we need not devote much time and money to countermeasures for technologies which are not feasible. A large number of useful options, which are also economically and operationally feasible, is an excellent position. The enemy cannot be sure which we may elect to develop and we can select those which maximize our force effectiveness in the light of decisions he has already made. It is much preferable to have too many options for future systems development than too few. The former situation results in choosing the best from many, but the latter could well mean that we would be unable to correct serious shortcomings in our defense posture.

Question. How will the national defense be affected if this real growth in the technology base is held to zero. To 4 percent?

Answer. The impact will be to reduce our future defense options, to permit the Soviets to narrow the technology leads in some areas, and to increase the danger of our being subjected to technological surprise and perhaps blackmail. Unfortunately the time scale for useful results from the Tech Base is long enough (10 to 15 years) that by the time we realize we have devoted too little effort to it, it is too late to correct the situation by suddenly increasing spending. We are suffering significant technological isolation between the defense and university scientific and engineering communities now because of the significant (50 percent) drop in real effort in Tech Base between 1965 and 1975. Our lead then was so large that its reduction has been serious but not catostrophic. We would be taking a serious risk with our national security to repeat such a sharp decrease.

DARPA BUDGET REQUEST

Question. Dr. Cooper, DARPA's budget request for fiscal year 1983 is $756.8 million, an increase of 11.9 percent over the $676.3 million provided for fiscal year 1982. You state that this gives you 5.7 percent growth. Therefore, your assumed inflation rate is 6.2 percent. DOD's stated composite inflation rate is 6.9 percent for fiscal year 1983. The stated rate for R&D is even higher, at 7 percent. Why are you using a different inflation rate for DARPA?

Answer. The DOD stated inflation rates are based upon indices developed in July 1981. In my statement to you, I based DARPA's real growth rate on a more recent inflation rate of 5.9 percent that was made available internally by DOD during January 1982 which reflects a lower projection for inflation. Allowing for inflation on the real growth between fiscal year 1982 and fiscal year 1983 results in a cumulative inflation of 6.2 percent with real growth of 5.7 percent. DARPA's real growth rate would be 4.6 percent when calculated the same way against the earlier 7 percent inflation rate.

LEVEL OF EFFORT IN TECHNOLOGY BASE

Question. Research funded in the Technology Base is level-of-effort, and the amount of work proposed to be done varies with the amount of money requested. In the minds of some, this leads to a variation of Parkinson's law; i.e., the money spent on the Technology Base will rise to equal the amount available, regardless of relevance, quality or necessity.

Is this a fair criticism?

Answer. The people who view the Technology Base as level of effort, must by necessity also view it as fixed in scope and never expanding. The problem is of course quite the opposite, i.e., new technology areas such as directed energy, VHSIC, etc., must be vigorously pursued, while at the same time, there are still significant capability gains to be made in the more traditional technologies, i.e., aeronautics, conventional weapons, propulsion, etc. In addition, there is the whole subject of integrating technologies which is becoming increasingly more important i.e., impact of VHSIC on aircraft combat capability. The result is that the technology front is ever expanding and we must pursue technology across that front if we are to reap the maximum benefits in terms of increased military capability in future weapons systems.

Question. Is there any doubt that the funds provided for Technology Base, whatever the amount, will be entirely spent?

Answer. There is no doubt that additional funding in the Technology Base would be entirely spent. This is the age old problem of allocation of scarce resources, the result is that the highest priority projects are pursued, while some important areas are inadequately addressed. However, there is a limit where decreasing returns on the investment will occur. We have not achieved that status yet; however, in an area as dynamic as the Technology Base, it requires close management control to identify those areas where the limit occurs.

Question. How does DOD go about deciding, for any particular project or program in the Technology Base, what level of effort is sufficient?

Answer. We do not decide on a level of effort. Management of the Technology Base is similar to that of any other area. Goals are established, based on Service needs, technology readiness, and applications opportunities. Programs are developed to achieve those goals, and the resources required to execute the programs are identified. However, because much of the Technology Base output is of long term focus and will generally not have an immediate impact on near term projects, when funding is scarce, the tendency is to cut the Technology Base, stretching out the program and giving the appearance of level of effort.

Question. Does the adage "once funded, always funded" apply to the programs and projects of the Technology Base? Please describe the criteria which are used to terminate such efforts. What percentage of these efforts have even terminated over the past three years?

Answer. When dealing in the Technology Base, there is a tendency to confuse technology areas or disciplines with specific projects. For example, we have had a continuing effort in Materials and Structures Technology in all three Services. However, within that program area we have marked changes in program content. For example, our efforts in organic composites has decreased significantly as these materials have moved into service use, whereas our work in metal matrix composites has accelerated because of the vast potential for these materials. The criteria to terminate Technology Base programs is generally based on the obsolescence of the technology (for military purposes), the technology has been developed sufficiently for transition to service use and/or only marginal gains in capability can be realized from continued funding. Our goal is to turn over about thirty (30 percent) of the Technology Base projects every year.

REPROGRAMMING FUNDS

Question. A cursory review of Congressional Descriptive Summaries shows a great deal of reprogramming activity in the accounts that comprise the Technology Base.

What percentage of the fiscal year 1981 funds provided for the Technology Base were reprogrammed to other uses? What does it appear that percentage will be for fiscal year 1982?

Answer. The DOD is concerned about reprogramming Technology Base fund to other uses, therefore, the Services are not permitted to reprogram from the total 6.1 and 6.2 accounts without approval of the Under Secretary of Defense for Research and Engineering. The instructions are issued during the apportionment process. In fiscal year 1981 there was no reprogramming approved. In fiscal year 1982 approximately $1 million has been approved for reprogramming. We do not anticipate additional requests. Services are permitted to reprogram within the 6.1 and 6.2 amounts in accordance with the accepted rules.

Question. Are the Technology Base accounts being used in some cases as a "slush fund" to finance other items not contained in the original budget request?

Answer. In our opinion they are not being used in this manner.

AVOIDING REDUNDANCY IN BASIC RESEARCH

Question. The basic research portion of the Technology Base is funded by the three Services and by DARPA under programs entitled Defense Research Sciences. Each of these programs includes sub-programs related to Chemistry, Mathematics, Electronics, etc. which appear to be similar, and may in fact be common. Although eventual application may differ, it would seem that work being done at the basic research level would be sufficiently nonspecific as to have general aplication.

Why are the Services and DARPA all funding basic research in the same subject areas?

Answer. Basic research generates the knowledge base on which technology development efforts depend. These efforts in turn support the system needs of the Military Services. Thus, the ultimate application of a basic research effort is often different. DARPA, on the other hand, frequently undertakes projects, often high risk, of interest to more than one Service. Overlaps between research efforts is minimized by coordination among the Services (for example the Joint Services Electronics Program), by technical reviews and conferences, and by supervision from the Office of the Director of Research and Technical Information.

Question. What steps are taken, and by whom, to ensure that redundancy is avoided?

Answer. Redundancy in research is not necessarily a bad thing. Two research efforts attempting to solve the same problem may well take a different approach, and it may be impossible to predict which one will be more successful. However, duplicative approaches to the same problem are avoided by close interaction between the DOD program monitors and by program area technical reviews sponsored by the Director of Research and Technical Information.

Question. For example, Mathematics research was funded in fiscal year 1982 by the Army, Navy and Air Force at $6.6 million, $21.8 million, and $12.6 million, respectively. For fiscal year 1983, the corresponding figures are $7.7 million, $28.6 million, and $15.9 million. Nevertheless many of the eventual applications (command and control, logistics, etc.) are similar. Who examines the various research grants made by the Services to ensure that the same work is not being done more than once?

Answer. As part of the normal review process, Mathematics research was reviewed for all Military Services on June 10, with program monitors from each Service present for all presentations. Research efforts were constantly compared by all participants with a view to ensuring that the same work is not done more than once.

Question. What cost savings could be obtained by merging the programming and administration of some of these efforts?

Answer. The efficacy of research cannot be measured with a precise yardstick; the quality or far-sightedness of a given piece of re-

search may not become evident until years after it has been completed. Research cannot be judged in the same manner as the development of an expensive new weapon system. Short-term cost savings obtained by merging programming and administration would reduce diversity and alternative approaches in important research areas and might well increase the cost of weapon systems in the long run.

Question. What criteria are used, and by whom, to determine which particular items of research should be done by DARPA, and which by the Services?

Answer. DARPA works through the Services. Funding by DARPA augments the research efforts of the Services in such a way as to make the research more widely applicable. Each Service attempts to influence DARPA to support its research interests, and DARPA thereby attempts to make each research dollar go further.

Question. How does DOD ensure that research it proposes to fund has not already been funded by NASA?

Answer. There are coordinating committees and meetings in those technologies of common interest to DOD and NASA, for example in aeronautics and in electronics. The Deputy Under Secretary of Defense for research and Advanced Technology is a member of the DOD/NASA Supporting Research and Technology Panel of the Aeronautical and Astronautics Coordinating Board which has responsibility for coordinating DOD/NASA programs in space and aeronautics.

Question. What steps were recommended pertinent to the above concerns by the Summer 1981 study of the Technology Base by the Defense Science Board? Are those steps being taken? If so, what cost savings can we expect, and where are those savings reflected in the budget?

Answer. In his 26 February 1982 action memorandum to the Assistant Secretaries for R&D of the Military Services and to their military counterparts, and to the Director of DARPA, the Under Secretary of Defense for Research and Engineering requested submissions on the Technology Base Investment Strategy, including implementation of the elements of the DSB Summer Study, which will be used to come up with a DOD-wide plan. This will be a continuing effort to improve the efficiency and effectiveness of the programs. The results of these actions do not appear in the fiscal year 1983 budget which was formulated in late 1981.

DOCUMENTATION OF RESEARCH OBJECTIVES

Question. OSD and the Services engage in a lengthy process of formulating and articulating research objectives. That process results in voluminous documentation prepared by the Services to set forth those objectives. It is unclear exactly what the relationship of those documented objectives is to the formulation of the annual RDT&E request.

Can you describe that relationship? How do published objectives become the subject of funding requests?

Answer. These published objectives are really program descriptions and plans. They are written in response to guidance provided to the Services by the Secretary of Defense, based on recommenda-

tions made by his staff. The descriptions and plans are carefully reviewed to determine if the Services are being responsive to OSD guidance. In summary, they provide the basis for the formulation of specific projects and programs for the budget request.

Question. Are the budget requests for the Technology Base the sum totals of individual programs, each of which has been separately costed, or are those totals derived in some other way?

Answer. The budget requests are sum totals of individual programs. Some trading of efforts between programs and between scientific and engineering disciplines is usually required for the Services to remain within fiscal guidance.

Question. Our Investigative Staff reports that some research organizations and individuals consider the Services' technology objectives documents to be too lengthy, untimely, and insufficiently specific to be of value.

Is this opinion widely held?

Answer. In our opinion, the detail is essential to describe in technical terms and interrelate the numerous projects making up the technology base.

Question. What can be done to streamline this process?

Answer. It is doubtful that the effort required to "streamline" the process would result in a net reduction of manpower. A compromise must always be made between sufficient detail to describe the program and so much information that senior DOD managers cannot digest it.

Question. How widely is this documentation distributed? Has any thought been given to curtailing that distribution?

Answer. The documents are made available to industry and military planners who have responsibility for planning and formulating research programs. At this time, we are not considering curtailment of their distribution.

LEGAL REQUIREMENTS CONCERNING MILITARY RELEVANCE

Question. The law requires that appropriated funds may not be used to finance any research projects or study unless it has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation. (Section 204, Defense Authorization Act for Fiscal Year 1971).

How has DoD specifically implemented this legislation?

Answer. It was implemented by a 18 January 1971 memorandum from the Deputy Secretary of Defense to the Service Secretaries, subject "Section 204 of Military Procurement Authorization Act."

Question. How does the Secretary of Defense go about determining the military relevance of each research project and study?

Answer. The Deputy Secretary of Defense delegated the authority to affirm potential relevance of research projects to the Secretaries of the Military Department, the Director, Defense Advanced Research Projects Agency, and the Director of (now Under Secretary of) Defense for Research and Engineering. Numerous and various planning, selection, and review mechanisms serve to ensure that funded projects are directed toward increasing fundamental knowledge and understanding in scientific fields providing the bases for development of Defense-related technologies.

Question. How have the individual Services specifically implemented this legislation?

Answer. The Services R&D programs are essentially user requirement-driven programs. The requirements are defined through Mission Area Analyses, annual laboratory reviews, and Long Range Planning Documents for each Service. For the Army, Navy, and Air Force respectively, these documents are: The Science and Technology Objectives Guide, Science and Technology Objectives, and Program Management Directives. For each Service the requirements are reviewed and prioritized by the appropriate Headquarters office. Programs determined not to have a potential relationship to a military function or operation are not funded. In addition, OUSDRE provides policy oversight to ensure that the funding and results of broadly applicable research are shared by the Services when the programs overlap.

Question. Provide for the record specific citations of written policies and instructions which implement this legislation.

Answer. In addition to the Deputy Secretary of Defense memorandum mentioned in Answer 1, implementation is called for in DOD Directive 3210.1, Section III Definition of Defense Research: "It provides fundamental knowledge for the solution of identified military problems. It also provides part of the base for subsequent exploratory and advanced developments in Defense related technologies."

DEFENSE NUCLEAR AGENCY TECHNOLOGY BASE

Question. The Defense Science Board completed a review of Defense Nuclear Agency's Technology Base Program in late 1981, and issued a draft report in January 1982. The report pointed out that although the Technology Base program is encouragingly strong there were some signs of weakness in DNA's responsiveness to DOD needs for nuclear weapons effects information and on the emphasis placed on emerging technologies. The draft report contained 14 recommendations to address the problems indentified. Has the final report been issued?

Answer. The report was submitted by the Chairman, Defense Service Board on 23, April 1982 to the Secretary of Defense and to the Chairman, Joint Chiefs of Staff.

Question. What comment does DOD have on the recommendations?

Answer. DOD supports the recommendations in general as evidenced by the answers provided to the next question. Most have already been implemented and others are under consideration and review.

Question. What actions are contemplated by the DNA to resolve the weaknesses cited in the report?

Answer. There were fourteen recommendations in the DSB report which are discussed below:

Recommendation No. 1. An additional number of professional (non-SES) technical personnel, approximately 20 slots, should be made available to DNA with appropriate administrative and clerical support. The Under Secretary should take immediate steps to

see that this allocation is made to permit DNA to recruit new junior professionals.

Response. DNA has requested that OSD provide 10 of the 20 postions as early-fills. All 20 positions are included in the DNA fiscal year 1984 POM.

Recommendation No. 2. Resources provided to the DNA technology base program should increase in proportion to the cost of living and near-term system requirements. The Under Secretary should direct the staff he designates to oversee DNA matters to assure that longer-term technology base resources are not diverted into more pressing short-run projects.

Response. The Deputy Director (Science and Technology), DNA is personnally monitoring the Technology Base program and has taken financial management steps (e.g., fencing of pulse power resources) to ensure that the Technology Base receives a high priority in fiscal year 1983 and beyond.

Recommendation No. 3. (1) A regular exchange program between laboratory and DNA technical personnel.

Response. The regular exchange between laboratory and DNA technical personnel has not yet been fully implemented. The frequency of irregularly scheduled visits has increased since the Deutch Panel evaluation

(2) A regular schedule of visits by DNA senior officials to the labs accompanied by comprehensive briefings on laboratory programs and capabilities.

Response. A regular visit of senior officials has been initiated.

(3) Strengthen the DNA field offices at Los Alamos and Livermore and have them support DNA Headquarters activities.

Response. The Director, DNA has established a Task Force to investigate the possibility of attaching the DNA Liaison Offices to the Deputy Director (Science and Technology) (DDST), Headquarters, DNA, and increasing their role.

(4) Develop new mechanisms to encourage open exchanges on nuclear weapon effects between DNA, DOD lead laboratories, DOE and DOD weapon system sponsors and SPO's.

Response. DNA is now specifically involving the DOE laboratories in weapon system technical issues (e.g., involvement of neutron vulnerability for closely spaced basing.

(5) Utilize more DOE and DOD laboratory personnel at DNA for in-house DNA technical program reviews to help provide technical criticism and guidance. The major goal should be to have DNA and the DOD and DOE laboratories operate in a more cooperative and supportive role.

Response. The DDST is developing plans to include DOE laboratory personnel in DNA technical program reviews, and to have DNA technical program reviews, and to have DNA technical personnel included in DOE technical program reviews.

(6) Greater participation by DOE laboratory personnel in DNA advisory groups (e.g., SAGE) and technical working groups.

Response. Two of the three recently appointed SAGE members are from the DOE laboratories. A total of three SAGE members (20 percent of the membership) are from the DOE laboratories.

(7) Similarly greater participation by DNA staff and DNA contractors in the DOE laboratory technical groups would also be useful.

Response. DNA is seeking advice from DOE on this matter.

Recommendation No. 4. The Review Group recommends that DNA seek broader participation on its technical advisory groups and the SAGE. DNA should make more of an effort to solicit views on the prospective DNA program from a larger community than the present contractors.

Response. DNA is actively seeking broader participation in its technical advisory groups and the SAGE. Of the 15 SAGE members, three are from government laboratories, three from industry, three are independent consultants, and six are DNA contractors. At the June 1982 SAGE meeting, there was extensive representation (110 participants) of government agencies and laboratories, the Services, private corporations and consultants.

Recommendation No. 5. Strengthening of DNA-Service and DNA-CINC technology transfer by reestablishment of a formal annual process to assure (a) the consideration by DNA of Service requirements, (b) identification of opportunities for joint project funding by the Services and DNA, and (c) identification of projects and technologies that are suitable for termination or transfer to the Services with no further DNA support.

Response. The formal process for the consideration of Service requirements has been reestablished. In addition to determining what requirements the Services have, DNA is informing the other Services of Nuclear Weapons Effects research of each.

Recommendation No. 6. DNA should review the magnitude and distribution of their programs at DOD laboratories with the objective of broadening this effort, especially through cooperative projects. In addition, DNA should explore with the Services the possibility for establishing a program to permit civilian technical personnel to spend a tour of duty with DNA.

Response. DNA is in the process of reviewing the magnitude and distribution of programs at DOD laboratories, and will explore the possibility of having Service civilian technical personnel spend a tour at DNA. DNA has recently obtained the temporary services (less than two years) of a civilian scientist to assist with the transfer of technology, in particular to the satellite community.

Recommendation No. 7. DNA should include in its program more measures to strengthen the engineering underpinning of nuclear weapons effects.

Response. DNA program reviews now emphasize the engineering underpinning of nuclear weapons effects. This will be a portion of the areas of interest of the civilian scientist mentioned in recommendation No. 6. Particular emphasis is being paid to the development of "how to" manuals.

Recommendation No. 8. USDRE forms and chairs a joint committee with representation from DNA, USAF, USN and special projects to develop an acceptable long-range satellite vulnerability R&D program. Because of their experience in simulation technology, DOE participation should be solicited. The plan should be directed toward developing R&D understanding of SGEMP phenom-

ena, based on a mini-SXTF-type facility rather than to system configuration.

Response. Since the Deutch Panel, DNA has established extremely active informal satellite program interaction with the USAF (Air Force Weapons Laboratory and Space Division) and others. The purposes of this interaction are to facilitate the provision of DNA test facilities for satellite vulnerability testing and the timely provision of key technical information for program decisions. Additionally, DNA and the USAF are jointly working on the MILSTAR program (e.g., trapped electron effects, etc.). Additionally, DNA is contributing as a consultant to the Naval Study (Satellites) Board.

Recommendation No. 9. DNA and DOE (defense programs) should form a technical working group, composed of contractor and laboratory experts to formulate alternative programs and policies to establish a joint DOD/DOE National X-Ray Simulation Technology Program.

Response. DNA and DOE (Sandia National Laboratory) have formed the Laboratory Simulator Committee. The Committee Charter has been drafted and awaits approval by the respective Agencies. Contractors will be invited to committee meetings when appropriate.

Recommendation No. 10. The DSARC process should be modified to include, at one or more milestones, formal consideration of nuclear vulnerability (especially to EMP) of systems under development intended for acquisition. DNA should be charged with the responsibility of providing nuclear vulnerability analyses to the DSARC.

Response. DNA is prepared to provide nuclear vulnerability analyses to the ADARC process upon direction.

Recommendation No. 11. The Review Group strongly endorses DNA's policy studies/systems analysis effort and notes the important contribution this effort has made to the DNA program, senior OSD officials, and operational commanders.

Response. DNA will continue the policy studies/systems analysis efforts.

Recommendation No. 12. DNA's charter should not be expanded to include primary DoD responsibility for CW/BW or conventional munitions.

Response. It is not anticipated that DNA's charter will be expanded to include DoD responsibility for CW/BW or conventional munitions.

Recommendation No. 13. The review Group recommends that the Under Secretary (RE) confirm both the need and propriety of DNA's intelligence activities. DNA should not issue finished intelligence without specific authority from DIA and conversely DIA should not issue finished intelligence reports that deal with nuclear weapons effects without DNA coordination. DNA is encouraged to undertake analyses based on intelligence data, provided it makes clear that such analyses are not finished intelligence.

Response. A Memorandum of Understanding has been approved by the Directors of DNA and DIA, which establishes a satisfactory analystical environment for both agencies.

Recommendation No. 13. DNA should publish its technical needs in Commerce Business Daily and evaluate unsolicited proposals re-

ceived in response to this notice thus providing more visible opportunity for competition. Second, DNA should assure that adequate administrative personnel and business information systems are available to support the R&D program in a timely and efficient manner.

Response. DNA is emphasizing the use of Commerce Business Daily to publish its technical needs, and is evaluating propsals received in response to these notices. At the request of DNA, the GSA is currently conducting a survey to evaluate DNA's needs for word processing and business management information systems to support the R&D program. The need for necessary additional administrative personnel to support the R&D program has been included in the fiscal year 1984 POM.

RELEVANCE OF IN-HOUSE LABORATORIES

Question. In-house laboratories operated by DoD have been criticized as working on projects where laboratory personnel have expertise, rather than where the military need is greatest. One recent case inpoint was a Navy-funded laboratory which Navy officials stated had turned out nothing of relevance to the Navy for years. Further, some projects within these laboratories take on lives of their own, such as the Army research in food irradiation which lasted nearly thirty years.

What mechanisms do OSD and the Services have to review the relevance of research to military needs?

Answer. Numerous mechanisms exist to review the relevance of research to military needs. The laboratory directors are charged with the responsibility for ensuring that laboratory programs are relevant. Both OSD and the Military Departments conduct budgetary and programmatic reviews of research that is on-going as well as proposed, periodically throughout the year. The Service reviews are attended by representatives from the product divisions as well as Service representatives responsible for maintaining relevant laboratory programs. In addition, the research conducted at the in-house laboratories is reviewed along with the extramural DoD research at topical reviews by the Director of Research and Technical Information, Office of the Deputy Under Secretary of Defense for Research and Advanced Technology. The most recent series of topical reviews was held in May and June of 1982. These reviews have been supplemented by the USDRE Independent Review of DoD laboratories undertaken by Dr. Robert Hermann in September 1981, which placed considerable emphasis on evaluating the need for and utility of the in-house laboratories. Finally, the Joint Logistics Commanders have recently chartered a joint Services Technology Base Panel under the auspices of the Joint Deputies for Laboratories to examine tech base issues of concern to each of the Services and to insure Tri-Service coordination on tech base initiatives.

Question. What specific steps do you take to keep in-house laboratories from turning into "hobby shops" where researchers pursue whatever interests them, rather than what interests their military sponsors?

Answer. The Services have established formal research objectives. These form the basis for formulating and executing the research program. Coupled with the extensive review system described in the previous response, we believe these are adequate safeguards against the conduct of non-relevant research.

Question. How is it possible to have a laboratory funded by a Service which operates for years without doing research which is of use to the Service? Why does it take probing by this Committee before changes are made?

Answer. We do not agree that the laboratories are doing research that is not of use to the Services and that it takes committee probing to make changes. Even the independent review indicates that much of the laboratory work has resulted in the innovation of new technology into systems now in our operational forces and that most of the functions assigned to those centers are unique and their functions cannot be transfered to industry. The laboratory structure and program are dynamic in nature and over the years have been changed by the Services and OSD to meet evolving technologies and situations.

PERSONNEL OF DOD LABORATORIES

Question. The USDRE Independent Review of DOD Laboratories, referred to above, makes some points concerning the staffing of those laboratories. The report states "the quality of laboratory scientific and engineering personnel is eroding."

Is that a polite way of saying that these personnel are becoming incompetent?

Answer. No. The statement, when taken into context with other portions of the report, indicates this is an area that needs attention to preclude a decline in the laboratory system in the future.

Question. What does the statement mean?

Answer. In the context of three recent reports that have touched on this subject, the situation is a general problem. Skilled scientists and engineers are not being educated and trained in adequate numbers to meet the combined needs of government and industry. The DOD and the country face a crisis in the availability of technical personnel. It is a problem broader than DOD, but DOD has a specific interest and responsibility. The independent review indicates that personnel practices over the last 5–10 years have exacerbated the situation and, "if continued, would lead to the decline of the laboratory system." The report also indicates some important changes have already been made. These include Congressional action to raise the pay cap and relaxation of the high grade limitations. In addition, DOD is actively involved in stimulating science and engineering careers oriented toward defense related research and development.

The report states "Bureaucratic procedures and perhaps an aging work force are suppressing the innovation necessary to advance the technology of these times."

Question. What bureaucratic procedures are spoken of here?

Answer. The independent review group in interviewing many personnel received numerous views that personnel practices, audits, contracting procedures, travel restrictions, etc., were hin-

dering them is the performance of their tasks. These procedures, checks and balances and regulations stem from a number of sources. However, "the real deficiencies or those which are perceived could severely damage the system if unchecked for very long." This is why DOD established the Laboratory Management Task Force to define and inititate actions to improve the operation of the in-house system.

Question. The Congress has lifted, from $100 thousand to $5 million, the threshold for "Determinations and Findings." What steps has DOD taken to make full use of this flexibility?

Answer. The Army and the Navy have implemented the new D&F levels. The Air Force is now in the process of implementing the new procedures.

Question. Please discuss the "aging work force" point. Does it appear that laboratory personnel are becoming technologically obsolete?

Answer. The Laboratory Management Task Force (LMTF) Study of scientists and Engineers in the DOD Laboratories has found that the average age of scientists and engineers in the DOD laboratories is about 42 years. The average age of scientists and engineers in the national population is about 37 years. Looking at trend data on average age of S&E's since 1977, the LMTF study found that the average age of S&E's over a 5-year period has increased only about one year.

As DOD personnel deal with more complex scientific and engineering problems than the general population at large, and due to the fact that a corporate memory is necessary in our labs in order to be "smart buyers," we do not feel that an average age of 42 years for our lab scientists and engineers is either excessive, or indicative of technological obsolescence.

Question. Why does it seem they are suppressing innovation?

Answer. We do not agree that the factors outlined above are suppressing innovation. The broad innovative base contained in our private sector, in-house laboratories and universities continue to be the envy of other countries. We have a number of innovative programs ranging from microelectronics to directed energy that offer great potential for the solution of future national security problems. The combined participants are addressing an array of innovative technologies and are continually creating new ideas that will lead to increased efficiency and effectiveness in our operational forces. We believe that the technology base, which has provided us the weapons we have today, is absolutely essential in order that we will have a highly effective family of weapons in the 1990's.

METHODS OF FUNDING DOD LABORATORIES

Question. The 12 major Navy research laboratories and 6 of the Army's 35 laboratories are industrially funded. However, the remaining Army, and all of the Air Force, laboratories are funded directly by appropriation. Under the industrial fund system, in-house laboratories compete with other potential performers, both in and out of Government, for research contracts. Supporters express the view that such competition hones and sharpens the ability of the in-house laboratories to meet research needs.

Why is it necessary, or even desirable, for DoD to have two systems of funding and operating its laboratories?

Answer. Actually the DOD has at least three systems of funding and operating its laboratories. Each of the three Services funds and operates its laboratories according to its own management approach. In OSD we observe and monitor the different approaches and occasionally offer suggestions on possible improvements based on experiences in one Service which we believe to be beneficial. Under our concept of controlled decentralization, and for best overall vitiality and effectiveness of the laboratories, it is considered better not to impose a specific management approach for all laboratories and Services.

Question. Compare the two systems in terms of effectiveness, efficiency, and economy.

Answer. Each system, industrial funding and direct appropriation, has advantages and disadvantages.

Effectiveness. Each is effective. Industrial funding permits the Program Manager (PM) to select the laboratory he believes will help him best. Direct appropriations are needed to fund investigations which PM's may not need at that point; for example, high energy lasers, VHSIC technology, software technology, electromagnetic gun technology, etc. Almost every new technology is better funded by appropriation because its ultimate use and application usually cannot be predicted early in the development cycle.

Efficiency. Industrial funding is usually more efficient when a well-defined objective exists. Research, however, is almost never efficient in the usual sense of the word. Attempts to make research "efficient" are almost always counterproductive.

Economy. There is little to choose on the basis of economy. One must first consider the objective and the resources available to achieve it. Even a nonproductive or deadend research project is often useful and economical because it prevents unwarranted and uneconomical efforts to develop a technology that cannot be effectively applied.

Question. If in-house laboratories compete with each other for the same projects, they evidently have duplicate capabilities. How do you justify maintaining in-house laboratories which have the same or similar capabilities?

Answer. The same way our nation justifies maintaining duplicate automobile manufacturers, airplane developers, university laboratories, etc. It is prudent to permit organizations that will ultimately apply the technology to participate in the development.

Question. Does their existence tend to cause unnecessary proliferation of technologies?

Answer. This is of course a judgment call. What is unnecessary proliferation to one person is healthy competition to another. We believe we have about the correct mix at this time. As technology emphases shift, however, we must constantly reevaluate our mix.

Question. What is lost by eliminating such duplicate capabilities?

Answer. Competition is lost for one. Surge capability to apply similar technologies to different classes of problems is another. Often it is not possible to determine in advance which of several approaches will be most effective and duplicate capabilities permit advocates of competing approaches. Sensors operating in a marine

environment often have different requirements from those operating on land battlefields, in the air, or in space.

Question. By the same token, if in-house laboratories are able to compete with industrial or educational laboratories, they evidently duplicate the capabilities of those non-Government facilities. Does this not put the Government in the business of competing with private industry?

Answer. It is a question of what competing means. DOD must have the in-house capability to evaluate technical proposals and advances advocated by industry. Some laboratories develop technologies of little or no interest to industry such as chemical warfare, large caliber guns, ammunition, special food and clothing and the like. It should be pointed out that about 75 percent of all DOD RDT&E is performed by the private sector.

UPGRADING IN-HOUSE FACILITIES AND EQUIPMENT

Question. On August 19, 1981, the Deputy Secretary of Defense announced a new policy to allow, with some exceptions, industrially funded activities to include in the rates they charge to their customers a depreciation factor based on the anticipated useful life of an asset. The policy will become effective fiscal year 1983, and the funds generated may be used for equipment purchases.

Does DOD intend to use this policy to upgrade facilities and equipment at industrially-funded laboratories?

Answer. Yes. The Navy has already computed the depreciation rates it will charge its customers; the Army is still working on a depreciation schedule and will have one shortly. The Air Force has no industrially-funded R&D activities.

The Navy has established an average rate of $1.49 per hour (or a 3.2 percent increase in the stabilized rate) for equipment depreciation charges in Navy Industrial Funded activities.

Question. Most DoD laboratories are not industrially funded. Is there a long-term plan which covers upgrading their facilities and equipment, including the funding of such upgrades? Provide a copy of that plan.

Answer. The Army has an on-going replenishment program for special purpose equipment purchase/upgrade, and in fiscal year 1983, plans to expend $18.9 million for equipment upgrade in non-industrial funded laboratories.

Non-industrial funded installations administer only 6 percent of the Navy's in-house RDT&E funds and support only 6 percent of in-house civilian personnel. Needs for equipment upgrade in these activities will continue to be met through the appropriations justified before Congress. In fiscal year 1983, the Navy has requested $7 million for non-NIF activity equipment upgrade.

The Air Force reports that it has no particular problems regarding obsolete equipment, and that equipment upgrade and new purchases are funded through project monies, as well as through general purpose line items.

In addition, the USDRE Independent Review of DoD Laboratories recommended that DoD increase the rate of modernization of facilities and equipment. The recommendation further supports investing some $70 million a year over the next 10 years for R&D

96-942 O - 82 - 17

facilities, and $25 million to $30 million a year for the next 10 years for equipment modernization. A task group is currently working on a plan for implementing this recommendation.

LEAD LABORATORY CONCEPT

Question. The concept of designating a lead laboratory for given technology areas has been applied in the past, but in recent years has not been aggressively pursued. Dr. DeLauer told our Surveys and Investigations Staff that the joint program approach, which is related to the lead laboratory concept, is used extensively in the technology base area, and cited the very high speed integrated circuit, high energy lasers, particle beam technology, and other programs as examples. He stated that he will be establishing more joint programs in the future, and considers them a viable and realistic way of doing business.

What has caused the lead laboratory concept to fall in disuse in recent years?

Answer. We do not agree that the concept has fallen in disuse. We have not disestablished any lead laboratories and are willing to consider future lead laboratories when technical and management considerations make their establishment a prudent course of action.

Question. Do you consider that the joint program approach provides as good a focus and institutional memory as a lead laboratory would?

Answer. We believe both approaches are satisfactory. The determination of which approach to use depends on the technology involved, facility locations, expertise in various organizations and, to an extent, past precedents.

Question. In certain programs, it is our understanding that the Office of the Deputy Under Secretary for Research and Advanced Technology is directly involved in the management of the program. Is it anticipated that this type of organization will serve as a model for future joint programs?

Answer. Yes, in selected areas.

Question. Do you believe a program in which a policymaking organization is involved in managing, receives the critical and independent overview desired?

Answer. The number of programs that could be managed in this manner is limited. The programs selected would be of high visibility to OSD top management and Congress. They will have a steering committee or similar advisory body. In addition, as in VHSIC, independent reviews by the DSB or other high level advisory groups will be conducted.

UNIVERSITY INVOLVEMENT

Question. Universities in the United States have played a significant role in doing the work represented by the Technology Base. For example, nearly 50 percent of DOD's basic research funds (the so-called "6.1 program") go to universities.

The controversy surrounding the Vietnam war led to severe curtailment by universities in defense-related research. Has the vigor

and cooperation of pre-Vietnam involvement been restored at this point?

Answer. There is every indication that it is being restored rapidly and with determination and good will on both sides. An example is the recently established DOD/University Forum at which issues of common concern are being addressed informally and in a spirit of full cooperation. The Forum was first suggested to the DOD by the Association of American Universities and recommended by the DSB Task Force on University Responsiveness to National Security Requirements.

The Forum is co-chaired by the Under Secretary of Defense for Research and Engineering and the President of Stanford University. It has already proved very helpful for exchanging viewpoints and starting new restoring cooperative endeavors in a number of critical areas of research and education.

Question. Is DOD encountering reluctance by universities to do research which is unequivocally military-related? Is there a preference to stay with technology which is, so to speak, ambiguous?

Answer. There appears to be little or no reluctance by the universities to undertake research simply because it is military-related. However, problems arise when this relationship may result in work which may be restricted or delayed in publication.

Question. It can be argued that DOD funding of university research serves a legitimate public purpose, even if some of the research may not be particularly relevant to DOD's needs.

Do you agree?

Answer. We consider all of our research to have a potential relationship to a military function or operation. We agree that DOD funding of university research serves a legitimate public purpose.

Question. Do you agree to the extent that you would commit DOD funds to work of little potential relevance to DOD's needs?

Answer. In general, no. For example, if such work is of interest mainly to another agency, it should be funded mainly by that agency.

EQUIPMENT AT UNIVERSITY LABORATORIES

Question. In the fiscal year 1983 budget, DOD is proposing a new program which will cost $150 million. Each year for five years, DOD proposes to spend $30 million to buy research equipment for universities. This request is justified by studies which conclude that the current equipment complement is obsolete, and that this problem has reached "crisis" proportions.

What is the total estimated value of the installed research equipment at U.S. universities?

Answer. The number requested is not currently known with confidence. The NSF has underway a survey entitled "Indicators of Scientific Research in Academic Institutions * * *" Data necessary to answer this question will be acquired in the physical sciences next year and the life sciences the following year.

One can arrive at a rough approximation, however, by assuming that 6 percent of all funds spent by universities on R&D between fiscal year 1965 and thereafter through fiscal year 1980 was spent

on equipment. Total R&D for these years was under $51 billion. Six percent is approximately $3 billion in current dollars.

Question. How much of that equipment do you estimate should be replaced?

Answer. The Association of American Universities (AAU) in a report to the National Science Foundation (NSF) estimates between $1 and $2 billion. Other estimates are in the same bracket and go as high as $4 billion.

Question. How did DOD determine the figure of $30 million per year for this proposal?

Answer. Various ways were used to estimate DOD's share of the shortfall, all coming close to the $150 million figure over five years, which is roughly the mean life of lab equipment. One estimate is based on the following figures. DOD supports on the order of 10 percent of university R&D; based on a $2 billion total replacement figure, DOD's share comes out as approximately $200 million.

Question. How will you decide which universities will get equipment, and how much they will get?

Answer. We have constituted a DOD University Research Equipment Committee, under the Director of Research and Technical Information, which is now in the process of setting up detailed guidelines on how proposals should be submitted to DOD, and how they will be evaluated. An announcement is expected to go out in September 1982.

Question. What reaction do you expect from universities not chosen?

Answer. Proposal procedures for research equipment will be as competitive as for research efforts, and the two will often be combined in a single proposal. As in any competition, there are winners and there are losers. We will continue to make every effort for the evaluations to be as fair and objective as possible.

Question. This new proposal aside, how much does DOD currently spend each year to buy equipment for university laboratories?

Answer. A rough estimate is $25 million. Most of this equipment is relatively small instrumentation. The new initiative is intended specifically for larger items in the $100 thousand to $1 million range.

Question. What disposition is made of equipment acquired under research contracts by the universities?

Answer. Such equipment is generally transferred to university ownership.

Question. Major universities having a large number of research contracts with DOD would appear to be in a favorable position to maintain a strong equipment base, which would tend to attract highly qualified researchers, thereby enhancing the potential for receiving additional contracts. What efforts are made to broaden the research base, and to make facilities available to smaller universities and to small research firms?

Answer. There are both large and small laboratories with a strong equipment base, depending on local support as well as initiative and abilities of the investigators, etc. Better equipment does enhance the ability of a research group both to attract better qualified investigators and DOD support. DOD started a Defense Small Business Advanced Technology (DESAT) program in 1981 to broad-

en the research base by encouraging small research firms. The award of university research instrumentation will be based on the merit of the defense-related research proposed in connection with the acquisition of the research equipment. This procedure defines a broad base in the sense that both small and large universities are capable of proposing high quality defense-related research and proposals from both will be given full and fair consideration.

Question. In view of the high cost of providing equipment to universities and to the laboratories, have any recent attempts been made to establish regional centers containing moder equipment procured with Government funds? How viable is such an approach?

Answer. No. The AAU report to the NSF on the Scientific Instrumentation Needs of Research Universities (June 1980), on page 8 pointed out the many drawbacks to such an approach.

OPEN PUBLICATION OF RESEARCH RESULTS

Question. A large part of the basic research that generates new technology stems from contracts and grants awarded to U.S. universities by the Government. The DOD awards a major part of these contracts and grants to academia for basic research, and it is in its interest that new technology which can be applied to military use not be improperly transferred to foreign countries. Such research efforts normally do not carry a security classification, and the results are published and made generally available in trade journals, symposia, conferences, and to foreign visitors at universities. Suggestions have been made that certain of these results should not be publicly revealed.

Academia feels very strongly that no impediments should be placed on the freedom to publish and disseminate new knowledge. The universities express the view that over the long haul, and from the broad viewpoint, academic freedom would be the best policy to pursue.

What are DOD's views on this issue?

Answer. The universities should be able to publish freely the results of basic research. Any impediments placed on the dissemination of this type of new knowledge would do more harm than good in strengthening U.S. science and technology relative to other countries. On the other hand, control over publication should be established in selected areas where military application is established.

Question. What action, if any, do you intend to take?

Answer. A number of actions have been taken to obtain the inputs and ensure the cooperation of the academic community. A DOD/University Forum has been set up for face-to-face discussions between senior DOD personnel and the Presidents of seven major U.S. universities, as well as the Presidents of three university associations. A working group has been established under the Forum to specifically consider export control issues as they affect the universities. The DOD is also strongly supporting and partially funding a National Academy of Sciences Panel on Scientific Communication and National Security.

Question. If some sort of restrictions were to be imposed, would universities decline to participate in DOD-sponsored research? If they do, what impact will that have on DOD's program?

Answer. DOD cannot speak for the universities, nor do the universities speak with one voice. However, we feel that for any system of restrictions to work, a consensus should first be established. Unilateral action by DOD would be as counter-productive as refusal by the universities to admit there even is a problem. We are working very hard on establishing a consensus and are hopeful that we can come up with a sensible and acceptable solution.

FOREIGN SCIENTISTS AT U.S. UNIVERSITIES

Question. An important element of the nation's technology base is trained scientific manpower. In recent years, the percentage of foreign born persons in U.S. graduate and postgraduate programs has increased substantially. At some major universities, U.S. citizens are earning fewer than 50 percent of the PhD's granted in scientific fields.

Does this situation represent, in effect, a net loss of scientific knowledge for the United States?

Answer. The answer is probably yes if you consider the outflow of graduates to their home country. However, we realize that there are benefits to be gained to the United States if the educational levels are upgraded in friendly countries.

Question. How does DOD view the training of foreign scientists at U.S. universities?

Answer. Some of the brightest graduate students at U.S. universities are not U.S. citizens. They make a major contribution to our scientific and engineering research effort. It probably would be helpful if some would become U.S. citizens and remain here.

Question. Does DOD sponsor research work by such scientists?

Answer. Yes.

Question. Overall, is this situation a matter for serious concern? If so, what should be done about it?

Answer. Yes, in selected areas. As indicated previously, we are working with universities to find a mutually agreeable approach to solve the problem.

[CLERK'S NOTE.—End of questions submitted by Mr. Murtha.]

Mr. MURTHA. We will now adjourn until 1:30.

WEDNESDAY, JUNE 23, 1982.

CHEMICAL WARFARE PROGRAMS

WITNESSES

DR. THEODORE S. GOLD, DEPUTY ASSISTANT TO THE SECRETARY OF DEFENSE (CHEMICAL MATTERS)

ARMY

MAJ. GEN. NILES J. FULWYLER, USA, DIRECTOR OF NUCLEAR AND CHEMICAL DIRECTORATE, OFFICE OF DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS

NAVY

REAR ADM. BRYAN W. COMPTON, JR., USN, DIRECTOR, STRIKE AND AMPHIBIOUS WARFARE DIVISION

AIR FORCE

BRIG. GEN. JERRY W. TIETGE, USAF, DEPUTY DIRECTOR OF OPERATIONS, DEPUTY CHIEF OF STAFF FOR PLANS AND OPERATIONS

MAJ. VICTOR R. NICOLAI, USAF, AIR BASE SURVIVABILITY GROUP, DIRECTORATE OF OPERATIONS, DEPUTY CHIEF OF STAFF, PLANS AND OPERATIONS

MICHAEL MACDONALD, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR POLICY

INTRODUCTION

Mr. ADDABBO. The committee will come to order.

The Chair recognizes the gentleman from Pennsylvania for the purposes of a motion.

Mr. MURTHA. Mr. Chairman, I move that the hearing this afternoon on chemical warfare program be held in executive session because of the classification of the material to be discussed.

Mr. ADDABBO. Under the rules a roll call is required. The clerk will call the roll.

Mr. WILLSON. Mr. Addabbo.

Mr. ADDABBO. Aye.

Mr. WILLSON. Mr. Chappell.

Mr. CHAPPELL. Aye.

Mr. WILLSON. Mr. Murtha.

Mr. MURTHA. Aye.

Mr. WILLSON. Mr. Dicks.

[No response.]

Mr. WILLSON. Mr. Wilson.

[No response.]

Mr. WILLSON. Mr. Hefner.

Mr. HEFNER. Aye.

Mr. WILLSON. Mr. Ginn.

[No response.]
Mr. WILLSON. Mr. Whitten.
[No response.]
Mr. WILLSON. Mr. Edwards.
Mr. EDWARDS. Aye.
Mr. WILLSON. Mr. Robinson.
Mr. ROBINSON. Aye.
Mr. WILLSON. Mr. McDade.
Mr. MCDADE. Aye.
Mr. WILLSON. Mr. Young.
Mr. YOUNG. Aye.
Mr. WILLSON. Mr. Conte.
[No response.]
Mr. WILLSON. Eight affirmative votes, Mr. Chairman.
Mr. ADDABBO. This hearing is now closed.

This afternoon the committee receives testimony on chemical warfare programs of the Department of Defense.

Budget levels for these programs have increased dramatically in recent years. For research and development alone, the budget goes from $88 million in Fiscal Year 1981 to $281 million in Fiscal Year 1983.

Additionally, the Fiscal Year 1983 budget includes funding for the first production of binary chemical weapons, a subject of some controversy. It is the purpose of this hearing to consider both the broad issues of chemical warfare policy and organization, and also specific budget issues such as binary weapon production, demilitarization, defensive capabilities, and research and development.

The principal witness is Dr. Theodore S. Gold, Deputy Assistant to the Secretary of Defense for Chemical Matters. He is accompanied by representatives of each of the services.

Dr. Gold, your prepared statement will be inserted in the record at this point. You may summarize it and then we will proceed to questions.

[The statement of Dr. Gold follows:]

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU IN SUPPORT OF THE ADMINISTRATION'S PROGRAM TO DETER CHEMICAL WARFARE. AS YOU MAY KNOW, SEVERAL MONTHS AGO I WAS DESIGNATED AS THE FOCAL POINT FOR ALL CHEMICAL MATTERS WITHIN THE DEPARTMENT OF DEFENSE. I WORK FOR DR. RICH WAGNER, THE ASSISTANT TO THE SECRETARY OF DEENSE FOR ATOMIC ENERGY, WHO ALSO CHAIRS THE DOD STEERING COMMITTEE ON CHEMICAL MATTERS, CONSISTING OF REPRESENTATIVES FROM THROUGHOUT THE OFFICE OF THE SECRETARY OF DEFENSE, THE SERVICES, THE JCS, AND THE DEFENSE INTELLIGENCE AGENCY. IN FORMULATING OUR PROGRAM, WE HAVE BEEN WORKING CLOSELY WITH THE DEPARTMENT OF STATE, THE ARMS CONTROL AND DISARMAMENT AGENCY, AND THE NATIONAL SECURITY COUNCIL. WE HAVE RECENTLY SUBMITTED TO CONGRESS A FULL REPORT ON OUR PROGRAM TO DETER CHEMICAL WARFARE.

WITH ME TODAY ARE THE THREE SERVICE REPRESENTATIVES ON THE DOD CHEMICAL STEERING COMMITTEE--REAR ADMIRAL BRYAN W. COMPTON, JR., DIRECTOR, STRIKE AND AMPHIBIOUS WARFARE DIVISION, US NAVY; MAJOR GENERAL NILES FULWYLER, DIRECTOR, NUCLEAR AND CHEMICAL DIRECTORATE, US ARMY; AND BRIGADIER GENERAL JERRY TIETGE, DEPUTY DIRECTOR OF OPERATIONS, US AIR FORCE.

I WOULD LIKE TO BEGIN WITH A SHORT REVIEW OF THE SOVIET UNION'S CAPABILITY TO WAGE CHEMICAL WARFARE AND FIGHT IN A CONTAMINATED ENVIRONMENT.

THERE ARE GAPS IN OUR KNOWLEDGE OF SOVIET CW ACTIVITIES. HOWEVER, AVAILABLE EVIDENCE INDICATES THAT OUR MAJOR ADVERSARY HAS DEVELOPED AND DEPLOYED A FORMIDABLE CAPABILITY TO WAGE CHEMICAL WARFARE. WE KNOW THE FOLLOWING:

THE SOVIET UNION HAS A MILITARY DOCTRINE THAT FORESEES THE USE OF CHEMICAL WARFARE AND ACKNOWLEDGES ITS VALUE, PARTICULARLY WHEN USED IN MASSIVE QUANTITIES AND WITH SURPRISE. THEY VIEW CHEMICAL WEAPONS AS HIGHLY EFFECTIVE AND BELIEVE THEY CAN ACHIEVE A HIGH CASUALTY RATE AGAINST PROTECTED FORCES BECAUSE OF SURPRISE AND DEFICIENCIES IN THE DEFENDER'S TRAINING AND EQUIPMENT.

THE SOVIET UNION POSSESSES A CONSIDERABLE VARIETY OF LETHAL AND NON-LETHAL CW AGENTS, INCLUDING NERVE, BLISTER, AND BLOOD TYPES. TRICHOTHECENE TOXINS ARE ALSO PART OF THEIR INVENTORY, BASED ON THE FINDINGS FROM LAOS AND KAMPUCHEA.

THE SOVIET UNION HAS MANY WAYS TO DELIVER CHEMICAL AGENTS INCLUDING AERIAL BOMBS, SPRAY TANKS, TACTICAL MISSILES, ARTILLERY AND MORTAR PROJECTILES, ROCKETS, AND MINES.

THE SOVIET UNION HAS THE POTENTIAL, IN EXISTING FACILITIES, TO PRODUCE VERY LARGE QUANTITIES OF CW (AND BIOLOGICAL WARFARE (BW)) AGENTS.

THE SOVIET UNION HAS LARGE AND WELL-TRAINED CHEMICAL WARFARE FORCES IN ALL SERVICES. THESE SOVIET CHEMICAL TROOPS, COMPRISING OVER 60,000 ACTIVE PERSONNEL, ARE ONE OF FOUR SPECIALIZED BRANCHES REPORTING DIRECTLY TO THE MINISTER OF DEFENSE. THE STATUS OF THE CHEMICAL TROOPS WAS UPGRADED DURING THE 1970s.

THE SOVIET UNION HAS A LARGE AND STILL EXPANDING CHEMICAL PROVING GROUND (SHIKHANY). THERE ARE ALSO SEVERAL SUSPECTED PRODUCTION FACILITIES IN THE SOVIET UNION.

THE SOVIET UNION PROVIDES EXTENSIVE CHEMICAL PROTECTION FOR THEIR FORCES AS EVIDENCED BY THE WIDE DISTRIBUTION OF INDIVIDUAL PROTECTIVE SUITS AND FIELD SHELTERS FOR CHANGING CONTAMINATED CLOTHING AND BY OUTFITTING MILITARY VEHICLES AND SHIPS WITH FILTERS AND DECONTAMINATION KITS. IN ADDITION, FIGHTING VEHICLES SUCH AS TANKS AND ARMORED PERSONNEL CARRIERS ARE PROVIDED WITH POSITIVE PRESSURE SYSTEMS.

THE SOVIET UNION HAS INVESTED VERY HEAVILY IN CAPABILITIES TO DECONTAMINATE PERSONNEL, EQUIPMENT, AND TERRAIN. THIS CAPABILITY INCLUDES ABOUT 12,000 MODERN DECONTAMINATION AND RECONNAISSANCE VEHICLES.

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THE SOVIET UNION PROVIDES INTENSIVE CW TRAINING FOR THEIR FORCES WHICH INCLUDES THE USE OF ACTUAL CHEMICAL AGENTS.

THE SOVIET UNION HAS BW RELATED FACILITIES AT SVERDLOSK, AND PERHAPS ELSEWHERE.

THE SOVIETS ARE USING, OR SPONSORING THE USE OF, CHEMICAL AGENTS AND/OR TOXINS IN SOUTHEAST ASIA AND AFGHANISTAN.

WE DO NOT KNOW VERY WELL:

THE SIZE OF THE SOVIET's CHEMICAL MUNITIONS STOCKPILE (QUANTITATIVE ESTIMATES OF THE SOVIET STOCKPILE ARE DIFFICULT TO MAKE. HOWEVER, EVEN THE LOW ESTIMATE OF USEABLE AGENT TONS PROVIDES A SUBSTANTIAL MILITARY CAPABILITY);

WHERE THEIR CW MUNITIONS ARE DEPLOYED;

THE SIZE AND SCOPE OF THEIR CW/BW R&D EFFORT (WE DO KNOW IT IS AN ACTIVE PROGRAM AND PROBABLY INCLUDES DEVELOPMENT OF NEW AGENTS).

HOWEVER, WE CAN ASK THE QUESTION, "HAVE THE SOVIETS INVESTED SO HEAVILY IN CW CAPABILITIES SOLELY FOR DEFENSIVE PURPOSES?" PERHAPS, BUT IN VIEW OF OUR WIDELY KNOWN WEAKNESS IN THE AREA AND THE LACK OF SIGNIFICANT THREAT CW CAPABILITIES FROM OTHER NATIONS, WE BELIEVE IT UNLIKELY. RATHER, GIVEN THAT (1) THEIR DOCTRINE PROVIDES FOR CHEMICAL WEAPONS USE, (2) THEY HAVE THE LETHAL CW AGENTS AND DELIVERY MEANS, (3) THEIR TROOPS ARE THE BEST TRAINED AND EQUIPPED IN THE WORLD TO FIGHT IN A CHEMICALLY CONTAMINATED ENVIRONMENT, AND (4) THEY ARE USING AND SPONSORING THE USE OF CHEMICAL AGENTS, PRUDENCE DICTATES THAT WE MUST TAKE SERIOUSLY THEIR CAPABILITY TO WAGE OFFENSIVE CHEMICAL WARFARE.

THE 1980 DEFENSE SCIENCE BOARD STUDY ON CW REPORTED, "THE LARGE INVENTORIES OF PROTECTIVE EQUIPMENT, COMBINED WITH EXTENSIVE TRAINING IN THEIR USE AND THE TESTING OF SUCH EQUIPMENT ON A REGULAR BASIS IN SIMULATED COMBAT SITUATIONS, INDICATES THAT THE SOVIETS HAVE ATTEMPTED NOT ONLY TO PROVIDE COMPLETE PROTECTION FOR THEIR FORCES BUT ALSO TO MINIMIZE THE DEGRADATION IN FORCE EFFECTIVENESS THEY WOULD EXPERIENCE IN A CHEMICAL ENVIRONMENT. THE LATTER, OF COURSE, IS AN IMPORTANT OBJECTIVE FOR ANY OFFENSIVE, AS WELL AS DEFENSIVE CAPABILITY."

IN CONTRAST TO THE SOVIET UNION DURING MOST OF THE 1970s THE US ALLOWED ITS CHEMICAL RETALIATORY CAPABILITY TO DECLINE; DID LITTLE TO IMPROVE CHEMICAL PROTECTION; AND NEGLECTED RELEVANT TRAINING AND DOCTRINE. THE UNITED STATES HAS NOT PRODUCED LEHTAL OR INCAPACITATING CHEMICAL AGENTS, TESTED OR FILLED MUNITIONS SINCE 1969. FURTHER, IN 1969, THE US UNILATERALLY RENOUNCED THE USE OF BIOLOGICAL AND TOXIN WEAPONS; AND SUBSEQUENTLY, ALL BIOLOGICAL AND TOXIN STOCKS WERE DESTROYED.

THE SOVIET UNION TODAY POSSESSES A DECISIVE MILITARY ADVANTAGE BECAUSE OF THE LARGE ASYMMETRY IN CHEMICAL CAPABILITIES. THE ADVANTAGES THEY ENJOY IN THE CONVENTIONAL ARENA ARE AMPLIFIED WHEN THE RESPECTIVE CHEMICAL CAPABILITIES ARE CONSIDERED, AND THUS THERE WOULD BE AN INCENTIVE FOR THEM TO USE CHEMICAL WEAPONS IN POTENTIAL FUTURE CONFLICTS.

THE ADMINSTRATION'S GOAL IN THE AREA OF CHEMICAL WARFARE, OR CW, IS A COMPLETE AND VERIFIABLE BAN ON THE DEVELOPMENT, PRODUCTION, AND STOCKPILING OF CHEMICAL WEAPONS. WE ARE WORKING TOWARD ATTAINING SUCH A BAN THROUGH THOROUGH AND DETAILED MULTI-LATERAL DISCUSSIONS AND NEGOTIATIONS IN THE COMMITTEE ON DISARMAMENT. WE MUST RECOGNIZE, OF COURSE, THAT EFFORTS TO BAN CW WILL TAKE TIME BEFORE THEY CAN SUCCEED. UNTIL SUCH A BAN CAN BE OBTAINED, OUR OBJECTIVE -- CONSISTENT WITH EXISTING TREATIES AND INTERNATIONAL LAW --WILL BE TO DETER THE USE OF CHEMICAL WEAPONS BY BOTH A DEFENSIVE AND RETALIATORY CAPABILITY. IN THIS INTERVENING PERIOD, IT IS ESSENTIAL, WE BELIEVE, THAT THE UNITED STATES PURCHASE SOME SENSIBLE LEVEL OF INSURANCE AGAINST CW USE THROUGH THE MODERNIZATION PROGRAMS WE ARE NOW PROPOSING AND WHICH WE WILL DISCUSS THIS AFTERNOON.

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AS YOU ARE AWARE, THE UNITED STATES IS PARTY TO TWO TREATIES WHICH IMPACT ON THE AREAS OF CHEMICAL AND BIOLOGICAL WARFARE. THE FIRST IS THE GENEVA PROTOCOL OF 1925 WHICH PROHIBITS THE USE IN WAR OF ASPHYXIATING, POISONOUS, OR OTHER GASES, AND OF BACTERIOLOGICAL METHODS OF WARFARE. THIS IS GENERALLY VIEWED AS A "NO FIRST USE" AGREEMENT SINCE A NUMBER OF COUNTRIES, INCLUDING THE UNITED STATES, HAVE ENTERED RESERVATIONS TO THE PROTOCOL ALLOWING CHEMICAL USE UNDER SPECIFIED CCONDITIONS. IN OUR CASE, WE HAVE RESERVED THE RIGHT TO RETALIATE WITH CHEMICAL WEAPONS AGAINST ANY ENEMY STATE WHOSE ARMED FORCES OR ALLIES DO NOT OBSERVE THE PROVISIONS OF THE PROTOCOL. THE SECOND TREATY IS THE BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS CONVENTION (BWC) WHICH PROHIBITS THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BIOLOGICAL OR TOXIN WEAPONS. TOXINS ARE PROHIBITED REGARDLESS OF THEIR ORIGIN OF METHOD OF MANUFACTURE.

CONSISTENT WITH THESE TREATIES, THE UNITED STATES WILL NOT USE CHEMICAL WEAPONS UNLESS THEY ARE FIRST USED AGAINST US OR OUR ALLIES. ALSO, THE UNITED STATES DOES NOT AND WILL NOT UNDER ANY CIRCUMSTANCES POSSESS BIOLOGICAL OR TOXIN WEAPONS.

WHILE UNILATERALLY RESTRAINING OUR CHEMICAL CAPABILITIES, THE UNITED STATES MADE MAJOR EFFORTS, IN THE LATE 70s, TO ELIMINATE THE CHEMICAL THREAT BY ATTEMPTING TO REACH AGREEMENT WITH THE SOVIETS ON A COMPREHENSIVE AND VERIFIABLE BAN ON CHEMICAL WEAPONS. VERIFICATION OF SUCH A BAN IS A COMPLEX AND DIFFICULT PROBLEM. EFFORTS STALEMATED PRINCIPALLY DUE TO FUNDAMENTAL DISAGREEMENT ON THE ESSENTIAL ISSUE OF THE NEED FOR EFFECTIVE VERIFICATION OF A CHEMICAL WEAPONS BAN AND PARTICULARLY SOVIET INTRANSIGENCE ON QUESTIONS RELATING TO ON-SITE INSPECTIONS. ON THE OTHER HAND, A TREATY WITH INADEQUATE VERIFICATION PROVISIONS IS UNACCEPTABLE TO THE UNITED STATES. NEGOTIATIONS WERE FURTHER COMPLICATED BY OUR WEAK CHEMICAL WARFARE POSTURE COMPARED TO THE SOVIETS, WHO HAD, AS I NOTED EARLIER, LITTLE ARMS CONTROL INCENTIVE IN VIEW OF THE LARGE ASYMMETRY IN CW CAPABILITIES. THE SOVIETS DID, HOWEVER, HAVE AN INTEREST IN NEGOTIATIONS AS LONG AS THEY IMPEDED IMPROVEMENT OF OUR CAPABILITIES.

THE LACK OF SUCCESS IN OBTAINING A COMPLETE VERIFIABLE CHEMICAL WEAPONS BAN LEADS TO THE INESCAPABLE CONCLUSION THAT CHEMICAL WARFARE DETERRENCE IS ESSENTIAL.

BEFORE WE DESCRIBE THIS PROGRAM, I WANT TO ADDRESS THREE QUESTIONS OFTEN RAISED REGARDING POSSIBLE RESPONSES TO THE SOVIET CW THREAT.

THE FIRST QUESTION RELATES TO THE ROLE OF OUR NUCLEAR FORCES IN DETERRING CHEMICAL WARFARE AGAINST US. I BELIEVE THAT WE CANNOT RELY ON OUR NUCLEAR POSTURE AS A CREDIBLE DETERRENT TO CHEMICAL USE SINCE THE SOVIETS HAVE GAINED AT LEAST PARITY IN THE NUCLEAR ARENA. FURTHERMORE, BARRIERS TO NUCLEAR WEAPONS USE SHOULD BE KEPT AS HIGH AS POSSIBLE; NOT LOWERED TO COUNTER THREATS WHICH CAN BE HANDLED IN OTHER WAYS. THEREFORE, TO DETER THE USE OF CHEMICAL WAPONS AGAINST THE UNITED STATES OR OUR ALLIES, WE MUST ELIMINATE THE SIGNIFICANT ADVANTAGE THE SOVIETS WOULD NOW GAIN BY INITIATING SUCH USE.

UNFORTUNATELY WE CANNOT RELY ON PROTECTION ALONE TO DETER SOVIET USE OF CHEMICAL WEAPONS WOULD LEAVE THEM WITH A DECISIVE MILITARY ADVANTAGE AND THUS AN INCENTIVE TO USE THESE WEAPONS. IMPROVED PROTECTION CAN SAVE LIVES AND REDUCE CASUALTIES; AND WE VIEW A STRONG PROTECTIVE CAPABILITY AS A CRITICAL COMPONENT OF OUR PROGRAM TO DETER CHEMICAL WEAPONS USE. INDEED, THIS IS THE AREA REQUIRING BY FAR THE MOST EMPHASIS IN RESOURCE EXPENDITURE. HOWEVER, AS IMPORTANT AS PROTECTIVE MEASURES ARE, ALONE THEY ARE INSUFFICIENT TO DETER CHEMICAL USE AGAINST US. WITH CURRENT CHEMICAL PROTECTIVE GEAR, WE FACE A SIGNIFICANT REDUCTION IN OPERATIONAL EFFECTIVENESS--IN MANY CASES MORE THAN 50 PERCENT--DUE TO THE RESTRICTIONS IMPOSED BY PROTECTIVE EQIPMENT AND PROCEDURES. WE ARE EXPENDING CONSIDERABLE TIME, EFFORT, AND MONEY TO DEVELOP BETTER PROTECTIVE EQUIPMENT; HOWEVER, IMPROVED EQUIPMENT WILL NOT ELIMINATE THE PERFORMANCE DECREMENT. IF WE ARE FORCED TO OPERATE ENCUMBERED BY PROTECTIVE EQUIPMENT AND PROCEDURES IN A CONTAMINATED ENVIRONMENT WHILE THE ENEMY IS ALLOWED TO OPERATE UNENCUMBERED IN A CLEAN ENVIRONMENT, CHEMICAL WEAPONS CAN OFFER HIM THE SAME RESULTS AS AN EXTREMELY HIGH CASUALTY RATE, EVEN IF HE KILLS NO ONE. THEREFORE, IN ADDITION TO IMPROVING OUR

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PROTECTION AGAINST CHEMICAL WEAPONS, WE NEED THE CAPABILITY TO FORCE THE INITIATOR OF CHEMICAL WARFARE TO ALSO OPERATE IN A CONTAMINATED ENVIRONMENT, TO USE HIS PROTECTIVE SYSTEMS AND THUS ALSO SUFFER A PERFORMANCE DECREMENT; ONLY THEN WILL HE SEE LITTLE ADVANTAGE IN USING CHEMICAL WEAPONS AND BE DETERRED.

THE CAUSES OF PERFORMANCE DEGRADATION ARE TWOFOLD: INDIVIDUAL PROTECTION AND UNIT DEFENSIVE PROCEDURES. FIRST, THERE ARE THE ENCUMBERANCES OF THE PROTECTIVE EQUIPMENT ITSELF. WEARING EQUIPMENT DESIGNED TO PROTECT AGAINST A VERY HOSTILE ENVIRONMENT UNAVOIDABLY INCREASES THE HEAT LOAD ON THE INDIVIDUAL AND MAKES CERTAIN PHYSICAL ACTIVITY DIFFICULT TO IMPOSSIBLE DEPENDING ON THE TEMPERATURE. THERE IS THE LOSS OF VISUAL ACUITY CAUSED BY WEARING A MASK, LOSS OF MANUAL DEXTERITY CAUSED BY WEARING PROTECTIVE GLOVES (WHICH MUST BE RUGGED AND STURDY) AND THE LOSS OF MANEUVERABILITY CAUSED BY WEARING PROTECTIVE BOOTS. THERE ARE ALSO CONSIDERABLE PROBLEMS IN COMMUNICATION AMONG INDIVIDUALS WEARING MASKS AND PROTECTIVE HOODS. ADDED TO THE ENCUMBERANCES OF THE PROTECTIVE EQUIPMENT ARE THE PROBLEMS CAUSED BY THE ADDITIONAL TASKS THAT MUST BE ACCOMPLISHED TO SURVIVE ON THE CONTAMINATED BATTLEFIELD. THESE INCLUDE CONTAMINATION AVOIDANCE PROCEDURES, DECONTAMINATION, BOTH PERSONNEL AND EQUIPMENT, AND INCREASED LOGISTICAL BURDENS. CHEMICAL ATTACKS, WHICH FORCE OUR TROOPS TO FIGHT, TO OPERATE SOPHISTICATED EQUIPMENT, TO TREAT AND EVACUATE CASUALTIES, TO REPAIR RUNWAYS, TO HANDLE AND UNLOAD SUPPLIES, TO COMMUNICATE, TO FLY HIGH PERFORMANCE AIRCRAFT AND HELICOPTERS, TO REPAIR EQUIPMENT, TO LOAD AMMUNITION AND DO THE MULTITUDE OF CRITICAL TASKS NEEDED TO SUPPORT MILITARY OPERATION, IN PROTECTIVE GEAR, WHILE THE SOVIET FORCES WOULD BE LARGELY FREE TO OPERATE UNENCUMBERED IN A NONCONTAMINATED ENVIRONMENT WOULD BE EXTREMELY EFFECTIVE. WE CANNOT ALLOW THE SOVIETS SUCH A DECISIVE ADVANTAGE. WE NEED THE CAPABILITY TO FORCE HIM TO ALSO OPERATE IN A CONTAMINATED ENVIRONMENT AND FACE THE SAME ENCUMBERANCES.

FINALLY WE COME TO THE THIRD QUESTION -- A VERY FAIR AND LEGITIMATE ONE -- WHICH IS, CAN'T WE RELY ON OUR CURRENT STOCKS OF CHEMICAL WEAPONS TO PROVIDE THE NEEDED DETERRENCE? AGAIN THE ANSWER IS THE NEGATIVE, AND WE ARE PREPARED TO GO INTO AS MUCH DETAIL AS THE COMMITTEE NEEDS TO MAKE AN INFORMED JUDGMENT ON THIS ISSUE.

TO BE AN EFFECTIVE DETERRENT, A CHEMICAL STOCKPILE MUST BE ABLE TO THREATEN CRITICAL ELEMENTS OF AN ENEMY'S FORCE STRUCTURE. THESE INCLUDE FRONT LINE, SECOND AND THIRD ECHELON TROOPS; CRITICAL COMMAND, CONTROL, AND COMMUNICATIONS CENTERS; AIRFIELDS, LOGISTICS FACILITIES; AND TRANSPORTATION NODES. IT MUST ALSO PROVIDE COMMANDERS THE FLEXIBILITY, IN TERMS OF AGENT AND WEAPON SYSTEMS, TO MATCH RETALIATORY CHEMICAL STRIKES TO THE TARGET CHARACTERISTICS AND MILITARY OBJECTIVE. FINALLY, THERE MUST BE SUFFICIENT MUNITIONS TO SUSTAIN RETALIATORY OPERATIONS LONG ENOUGH THAT AN ENEMY WILL SEE NO ADVANTAGE IN PROLONGING A CHEMICAL EXCHANGE.

THE CURRENT US RETALIATORY CHEMICAL STOCKPILE IS INADEQUATE FOR THIS DETERRENT ROLE. IT IS NOT A QUESTION OF THE TOTAL AMOUNT OF CHEMICAL AGENTS, BUT RATHER PRIMARILY A LACK OF MILITARILY USEFUL WEAPONS. OVER 60 PERCENT OF THE CHEMICAL AGENT IS STORED IN BULK CONTAINERS. THERE IS NO CAPABILITY TO USE THIS BULK AGENT EXCEPT IN A FEW OLD AIRCRAFT-CARRIED SPRAY TANKS (EXTREMELY VULNERABLE AGAINST MODERN AIR DEFENSES) IN IMPROVISED LAND MINES (OF VERY DOUBTFUL MILITARY UTILITY) OR AS FILL FOR NEW MUNITIONS (IF A LOADING CAPABILITY IS REESTABLISHED). ABOUT 3 PERCENT IS IN UNREPAIRABLE MUNITIONS INCLUDING LEAKERS. ANOTHER 8 PERCENT IS IN OLD ROCKETS WHICH HAVE DETERIORATED AND FOR WHICH LAUNCHERS NO LONGER EXIST. THE REMAINING APPROXIMATELY 28 PERCENT IS COMPRISED OF WHAT WE CALL READY OR REPAIRABLE MUNITIONS. HOWEVER, MOST OF THESE MUNITIONS HAVE OR WILL HAVE, LITTLE OR NO MILITARY UTILITY; BECAUSE THEIR DELIVERY SYSTEMS ARE COMING OUT OF THE INVENTORY (105MM HOWITZERS, 4.2 INCH MORTARS) OR BECAUSE THEY ARE INEFFECTIVE (AERIAL SPRAY TANKS, LAND MINES). FINALLY WE COME TO THE REMAINING LESS THAN 10 PERCENT OF OUR CHEMICAL AGENT STOCK WHICH IS IN MUNITIONS WITH SOME MILITARY UTILITY. THESE ARE 155MM AND 8 INCH ARTILLERY PROJECTILES AND BOMBS WITH NON-PERSISTENT AGENTS. HOWEVER, THE AMONG OF THESE USEABLE MUNITIONS IS NOT SUFFICIENT; MOREOVER, THERE ARE CRITICAL CAPABILITY DEFICIENCIES.

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PROBABLY OF MOST SIGNIFICANCE, THE STOCKPILE IS LACKING IN WEAPONS SUITABLE FOR USE AGAINST REAR ECHELON TACTICAL TARGETS. THE ONLY WAY TO FORCE LONG-TERM DEGRADATION ON REAR TARGETS IS TO CONTAMINATE THEM WITH A PERSISTENT AGENT. HOWEVER, ALL OUR BOMBS ARE FILLED WITH NONPERSISTENT NERVE AGENT. THE ONLY REAR ECHELON PERSISTENT AGENT CAPABILITY IS IN A SMALL NUMBER OF AIRCRAFT SPRAY TANKS WHOSE DELIVERY CHARACTERISTICS MAKE THE AIRCRAFT EXTREMELY VULNERABLE AGAINST MODERN AIR DEFENSES. THUS THE AIRFIELDS, SUPPLY AND MAINTENANCE CENTERS AND OTHER CRITICAL FACILITIES NEEDED TO SUPPORT WARSAW PACT MILITARY OPERATION, WOULD NOT BE FORCED TO CONTEND WITH THE SEVERE PROBLEMS OF A CHEMICALLY CONTAMINATED ENVIRONMENT. THE NAVY HAS A VERY LIMITED RETALIATORY CAPABILITY CONSISTING OF WETEYE AND MK-94 BOMBS CONTAINING A NON-PERSISTENT AGENT.

BY THEIR NATURE, THE CURRENT UNITARY MUNITIONS IMPOSE LOGISTICAL AND OPERATIONAL RESTRICTIONS WHICH REDUCE THEIR UTILITY AND INCREASE COSTS. THEY REQUIRE ELABORATE SAFETY PRECAUTIONS DURING STORAGE, HANDLING, AND SHIPMENT. FOR EXAMPLE, THE AIR FORCE SPRAY TANK WEIGHS ABOUT 2,000 LBS, BUT COMES IN A 4,000 LB SHIPING CONTAINER. THUS, TWO-THIRDS OF THE TRANSPORTATION REQUIREMENT YIELDS NO COMBAT CAPABILITY.

UNITARY MUNITIONS ALSO PRESENT A HAZARD TO OUR OWN POSITIONS IF DAMAGED BY AN ENEMY ATTACK. THIS PROBLEM IS PARTICULARLY SEVERE FOR NAVAL VESSELS.

FINALLY, WE HAVE EVIDENCE OF PHYSICAL DETERIORATION OF CURRENT MUNITIONS AND AGENTS. RECENT SAMPLING REVEALS THAT THE NERVE AGENT IN READY AND REPAIRABLE MUNITIONS HAS BEGUN DECOMPOSITION DURING THEIR LONG (12 TO OVER 35 YEARS) STORAGE PERIOD. ONE COMPLICATION IS REDUCED EFFECTIVENESS ALTHOUGH THE 155MM AND 8-INCH ROUNDS STILL MEET MINIMUM STANDARDS. MORE SERIOUS IS THAT FIRING SAFETY OF THE MUNITIONS IS BECOMING UNCERTAIN DUE TO METAL PARTS EXPOSURE TO CORROSIVE DECOMPOSITION PRODUCTS (PARTICULARLY HYDROGEN FLUORIDE. FIRING SUBJECTS THE SHELL TO VERY HIGH STRESS. FAILURE OF THE METAL PARTS UNDER THIS STRESS COULD CAUSE INJURY TO THE GUN CREW OR MAKE THE SHELL'S FLIGHT CHARACTERISTICS UNPREDICTABLE. ALSO, LEAKS OCCUR. ALTHOUGH THE TOTAL NUMBER OF LEAKERS IS SMALL (MUCH LESS THAN 1 PERCENT), THEY ARE BEING FOUND WITH INCREASING FREQUENCY IN THE OLDER WEAPONS INDICATING DETERIORATION OF THE METAL OVER TIME. THEREFORE, WE WILL MONITOR THE STRUCTURAL INTEGRITY OF THE MUNITIONS, PARTICULARLY ARTILLERY PROJECTILES TO DETERMINE IF THEY WILL BE SAFE TO USE.

THUS, WE SEE THAT THE CURRENT RETALIATORY STOCKPILE IS DEFICIENT IN MILITARY CAPABILITY, BOTH QUALITATIVELY AND QUANTITATIVELY, IS LESS SAFE TO HANDLE, AND MORE EXPENSIVE IN LOGISTICAL RESOURCES THAN IT COULD BE, AND INDEED MAY BE TOTALLY UNUSEABLE WITHIN THE NEXT 10 TO 20 YEARS.

THE CHOICES BEFORE US ARE NOT DETERRENCE OR DEFENSES OR RETALIATION. GROUPING THESE AS ALTERNATIVES CONFUSES OBJECTIVES AND MEANS. OUR OBJECTIVE UNTIL WE CAN ACHIEVE A VERIFIABLE BAN, IS DETERRENCE--THE MEANS OF ACHIEVING THIS OBJECTIVE ARE THE ABILITY TO SURVIVE AND FIGHT AS WELL AS THE SOVIETS CAN IN A CONTAMINATED ENVIRONMENT AND THE ABILITY TO FORCE THEM TO FIGHT IN SUCH AN ENVIRONMENT IF THEY USE CHEMICAL WEAPONS. BOTH ARE NECESSARY TO DENY THE SIGNIFICANT ADVANTAGE THE SOVIETS WOULD NOT GAIN FROM INITIATING CHEMICAL WARFARE.

I WILL NEXT TURN TO OUR PROGRAM TO DETER CHEMICAL WARFARE. BASED ON THE PREVIOUS DISCUSSION, THE PROGRAM NATURALLY DIVIDES INTO TWO COMPONENTS; IMPROVING OUR PROTECTION AGAINST CHEMICAL ATTACKS, AND ASSURING A CREDIBLE RETALIATORY CAPABILITY. THERE IS ADDITIONALLY A THIRD COMPONENT--DISPOSING OF OUR OBSOLETE MUNITIONS (DEMILITARIZATION) WHICH IS A FORMIDABLE PROBLEM IN ITS OWN RIGHT.

THE OBJECTIVE OF THE PROTECTIVE COMPONENT OF OUR PROGRAM IS TO ENSURE OUR MILITARY FORCES CAN SURVIVE AND TO GIVE THEM THE BEST POSSIBLE ABILITY TO SUSTAIN EFFECTIVE OPERATIONS IN A CONTAMINATED ENVIRONMENT. THERE ARE THREE BASIC ELEMENTS TO THE PROTECTIVE COMPONENT OF OUR PROGRAM: TO REESTABLISH A STRONG TECHNOLOGY BASE, TO DEVELOP APPROPRIATE DOCTRINE AND CONDUCT TRAINING RELEVANT TO OPERATING IN THE CHEMICAL ENVIRONMENT, AND TO PROCURE AND DEPLOY PROTECTIVE EQUIPMENT IN SUFFICIENT QUANTITY AND QUALITY TO PROVIDE FOR SUSTAINED OPERATIONS.

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A STRONG TECHNOLOGY BASE AND RESEARCH AND DEVELOPMENT PROGRAM ARE REQUIRED AS INSURANCE AGAINST TECHNOLOGICAL SURPRISE AND TO PRODUCE NEW PROTECTIVE SYSTEMS WHICH REDUCE THE RESTRICTIONS ASSOCIATED WITH PRESENT EQUIPMENT AND FILL THE MANY GAPS IN OUR CURRENT PROTECTIVE CAPABILITY. IT IS NECESSARY TO UPDATE, AND IN SOME CASES, CREATE MILITARY DOCTRINE TO INTEGRATE CHEMICAL DEFENSE INTO OUR COMBAT CAPABILITIES. WE MUST ALSO TRAIN OUR FORCES TO PERFORM THE WARTIME TASKS WHILE USING PROTECTIVE SYSTEMS. THIS TRAINING SHOULD BE UNDER THE MOST REALISTIC CONDITIONS POSSIBLE--PREFERABLY FIELD EXERCISES USING TRAINING SIMULANTS. FINALLY, WE NEED TO FIELD SUFFICIENT QUANTITIES OF THE BEST POSSIBLE PROTECTIVE SYSTEMS IN ALL AREAS: INDIVIDUAL PROTECTION, COLLECTIVE PROTECTION, DETECTION AND WARNING, DECONTAMINATION, AND MEDICAL.

MAJOR PROGRESS IN THE PAST FEW YEARS, IN ADDITION TO RECOGNITION OF THE CHEMICAL THREAT, HAS BEEN IN THE DISTRIBUTION OF INDIVIDUAL PROTECTIVE EQUIPMENT, PARTICULARLY TO OUR SOLDIERS AND AIRMEN, AND IN EXPANDING TRAINING, BOTH INDIVIDUAL (BASIC AND ADVANCED) AND UNIT.

THERE REMAINS SERIOUS QUALITATIVE AND QUANTITATIVE DEFICIENCIES IN OUR PRESENT CHEMICAL PROTECTIVE CAPABILITY.

KEY DEFICIENCIES FOR ALL SERVICES ARE THE LACK OF PROTECTIVE CLOTHING WHICH IS NOT DEBILITATING IN ITS OWN RIGHT; COLLECTIVE PROTECTION SYSTEMS FOR KEY EQUIPMENT, FACILITIES, AND REST AND RELIEF AREAS; ADEQUATE DETECTION AND WARNING DEVICES CAPABLE OF RESPONDING TO ALL THREAT AGENTS; DECONTAMINATION EQUIPMENT AND AGENTS WHICH ARE EFFECTIVE AND USEABLE ON ALL EQUIPMENT; AND THE CAPABILITY TO TREAT LARGE NUMBERS OF CHEMICAL AND CONVENTIONAL CASUALTIES IN A TOXIC ENVIRONMENT. FINALLY, MUCH REMAINS TO BE DONE TO IMPLEMENT RELEVANT TRAINING AND DEVELOP APPROPRIATE DOCTRINE.

THE PROTECTIVE COMPONENT OF OUR PROGRAM AIMS AT CORRECTING THESE DEFICIENCIES. THE TOTAL FY 1983 REQUEST FOR PROTECTIVE PURPOSES IS $508M. OF THAT AMOUNT, RDT&E TO SOLVE OUR LONGER-TERM QUALITATIVE PROBLEMS REPRESENTS $236M. ACQUISITION OF DEFENSIVE SYSTEMS, THROUGH OUR PROCUREMENT AND O&M ACCOUNTS, COMES TO $263M, AND $9M IS FOR CONSTRUCTION OF TRAINING FACILITIES. INVESTMENT IN PROTECTIVE IMPROVEMENTS REPRESENTS MORE THAN 70% OF OUR TOTAL FY 1983 CHEMICAL BUDGET REQUEST AND IS EXPECTED TO ABSORB APPROXIMATELY TWO-THIRDS OF OUR PROGRAM COSTS THROUGH FY 1987. WE WILL CONTINUE TO SUPPORT A VIGOROUS RDT&E PROGRAM TO SEARCH FOR BETTER PROTECTIVE SYSTEMS. THE AMOUNT DEVOTED TO ACQUISITION WILL INCREASE AS THE RDT&E PROGRAM BEARS FRUIT. WE WILL CONTINUE TO PLACE MAJOR EMPHASIS ON DEVELOPING DOCTRINE, AND IMPLEMENTING TRAINING, AND EXERCISES.

THE OBJECTIVE OF THE RETALIATORY COMPONENT OF OUR PROGRAM IS TO MAINTAIN THE SAFEST, SMALLEST STOCKPILE THAT DENIES A SIGNIFICANT MILITARY ADVANTAGE TO ANY INITIATOR OF CHEMICAL WARFARE. WE NEED NOT MATCH THE SOVIETS IN AGENT/MUNITION QUANTITIES AND TYPES. RATHER, OUR STOCKPILE REQUIREMENTS ARE DRIVEN BY THE NEED TO FORCE THE INITIATOR OF CHEMICAL WARFARE TO OPERATE ENCUMBERED BY PROTECTIVE CLOTHING AND BURDENED BY THE LOGISTICS AND REDIRECTION OF COMBAT POWER NECESSARY TO SUSTAIN OPERATIONS IN A CW ENVIRONMENT. FACTORS CONSIDERED IN DERIVING STOCKPILE REQUIREMENTS INCLUDE THE POTENTIAL TARGETS FOR CHEMICAL RETALIATION, WEAPON AND AGENT EFFECTS, EXPLOITABLE SOVIET VULNERABILITIES, US DOCTRINE AND FORCE STRUCTURE, AND ESTIMATES OF THE DURATION OF POTENTIAL CONFLICTS. BECAUSE GROWTH IN THE SOVIET CHEMICAL STOCKPILE WOULD HAVE LITTLE BEARING ON THE NUMBER OF SUITABLE CHEMICAL TARGETS IN THEIR FORCE STRUCTURE, OUR MUNITIONS REQUIREMENTS ARE LARGELY INSENSITIVE TO CHANGES IN THEIR STOCKPILE.

OUR PROGRAM TO MODERNIZE THE US RETALIATORY STOCKPILE IS TWO PRONGED: ENHANCING THE READINESS OF THE CURRENT STOCKPILE AND PRODUCING BINARY CHEMICAL WEAPONS.

THE UTILITY OF THE CURRENT STOCKPILE IS BEING ENHANCED BY UPGRADING MUNITIONS TO INCREASED READINESS, AND INCREASING MAINTENANCE AND AIRCRAFT COMPATIBILITY. THE AERIAL SPRAY TANKS ARE BEING MADE COMPATIBLE WITH AIRCRAFT TO PROVIDE AT LEAST SOME CAPABILITY UNTIL THE BINARY BOMB IS AVAILABLE. HOWEVER, THESE MEASURES WILL NOT ALTER THE DECLINE IN USEABLE MUNITIONS DUE TO THE PHASING OUT OF DELIVERY SYSTEMS NOR ALLOW THE USE OF BULK AGENT NOR PROVIDE AN EFFECTIVE CAPABILITY

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AGAINST DEEP TARGETS. THIS MAINTENANCE EFFORT WILL COST APPROXIMATELY $19M IN FY 83, INCLUDING $1M FOR CONSTRUCTION OF A MAINTENANCE FACILITY ON JOHNSTON ISLAND. THIS MAINTENANCE EFFORT IS REQUIRED TO MAINTAIN A RETALIATORY CAPABILITY UNTIL BINARY MUNITIONS BECOME AVAILABLE.

OUR PLANS ARE TO PRODUCE TWO BINARY WEAPONS, THE 155MM ARTILLERY PROJECTILE AND THE BIGEYE BOMB, DURING THE FY 1983-1987 PERIOD TO PROVIDE THE CAPABILITY TO ATTACK BOTH FRONT LINE AND REAR ECHELON TARGETS BINARY MUNITIONS AS BEING DEVELOPED BY THE US CONTAIN TWO SEPARATE RELATIVELY NONTOXIC SUBSTANCES WHICH ARE MIXED WHEN THE MUNITION IS IN FLIGHT TO THE TARGET TO YIELD THE STANDARD NERVE AGENTS. BINARY MUNITIONS ARE PREFERABLE TO FILLING MORE UNITARY MUNITIONS,

BECAUSE THEY CAN BE MORE EASILY MOVED FORWARD IN TIMES OF CRISIS; DO NOT PRESENT A HAZARD IF DAMAGED IN AN ATTACK ON OUR MUNITIONS AREAS; AND PROVIDE SIGNIFICANT SAFETY AND LOGISTICAL ADVANTAGES THROUGHOUT THE MANUFACTURE, STORAGE, USE, AND EVENTUAL DISPOSAL SEQUENCE. WHEN FIRED, THE 155MM ARTILLERY ROUND YIELDS THE NONPERSISTENT NERVE AGENT GB. THE BIGEYE WILL YIELD THE PERSISTENT NERVE AGENT VX. IN MANUFACTURE, STORAGE, AND SHIPMENT, THE TWO BINARY COMPONENTS WILL BE SEPARATED. THE COMPONENTS WILL NOT BE MATED UNTIL AUTHORITY IS RECEIVED TO CONDUCT RETALIATORY CHEMICAL ATTACKS, AND THE ACTUAL AGENT IS NOT PRODUCED UNITL THE MUNITION IS IN FLIGHT TO THE TARGET. THE TOTAL BINARY FUNDING REQUEST FOR FY 1983 IS $104M, $30M OF WHICH IS FOR MUNITIONS PROCUREMENT. THE REMAINDER IS FOR RDT&E ($32M) AND CONSTRUCTING AND EQUIPPING BIGEYE PRODUCTION FACILITIES ($42M). PROCUREMENT OF THESE MUNITIONS IS EXPECTED TO COST LESS THAN $1B DURING THE FY 1983-1987 PERIOD.

BEYOND 1987, REQUIREMENTS FOR PRODUCTION OF THE 155, BIGEYE, OR ANY OTHER CHEMICAL WEAPON WILL DEPEND ON THE OUTCOME OF DISARMAMENT EFFORTS AND CONTINUING REFINEMENT OF MILITARY NEEDS. A MAJOR ROLE OF OUR OFFICE WILL BE TO CLOSELY EVALUATE THESE NEEDS.

I WILL ONLY BRIEFLY ADDRESS THE PROBLEM OF DEMILITARIZATION; I.E., DISPOSING OF OLD MUNITIONS. USING CURRENT TECHNOLOGY, DISPOSING OF THE ENTIRE STOCKPILE, WHICH WE EVENTUALLY MUST DO, COULD COST MORE THAN $2B. APPROXIMATELY 10% OF OUR FY 1982 BUDGET REQUEST ($74M) IS FOR EITHER DEMILITARIZATION OF CURRENT UNSERVICEABLE MUNTIONS ($61M) OR R&D DIRECTED AT FINDING MORE COST EFFECTIVE TECHNOLOGY APPROPRIATE FOR THE MUCH GREATER TASK OF DISPOSING OF THE ENTIRE STOCKPILE.

WE ANTICIPATE EXPENDITURES FOR CHEMICAL WARFARE DETERRENT PROGRAMS WILL BE APPROXIMATELY $6-7B DURING THE FY 1983-1987 PERIOD. CHEMICAL PROTECTION WILL ACCOUNT FOR APPROXIMATELY TWO-THIRDS OF THE PROJECTED COSTS, WITH THE REMAINDER EQUALLY ALLOCATED TO PROVIDE A RETALIATORY CAPABILITY AND CONTINUE RDT&E AND PILOT PLANT DEMILITARIZATION FOR OBSOLETE EXISTING CHEMICAL STOCKS.

WE HAVE DESCRIBED WHAT WE BELIEVE IS A PRUDENT AND RESTRAINED PROGRAM TO REDRESS A VERY SERIOUS DEFICIENCY. OUR OBJECTIVE IS TO ELIMINATE THE THREAT OF CHEMICAL WARFARE THROUGH A COMPLETE AND VERIFIABLE BAN ON CHEMICAL WEAPONS. UNTIL WE CAN ACHIEVE SUCH A BAN, ONE MUST DETER THE SOVIET UNION FROM USING THEIR FORMIDABLE CAPABILITIES TO WAGE CHEMICAL WARFARE AGAINST US OR OUR ALLIES. IN ORDER TO DETER, WE MUST IMPROVE BOTH OUR PROTECTIVE AND RETALIATORY CAPABILITIES. OUR PROGRAM WILL IMPLEMENT TRAINING AND DEVELOP DOCTRINE, PROCURE AND DISTRIBUTE PROTECTIVE EQUIPMENT, CONDUCT A VIGOROUS R&D PROGRAM TO DEVELOP IMPROVED PROTECTIVE SYSTEMS, MAINTAIN THE MILITARILY USEFUL PORTION OF THE CURRENT RETALIATORY STOCKPILE, DISPOSE OF THE REMAINDER AND FINALLY DEVELOP AND PROCURE BINARY MUNITIONS. OUR ONLY OBJECTIVE FOR HAVING CHEMICAL WEAPONS IS TO DETER THE USE OF CHEMICAL WEAPONS AGAINST THE UNITED STATES OR OUR ALLIES. THERE IS NO OTHER REASON.

THIS PROGRAM WILL REDUCE THE THREAT OF CHEMICAL WARFARE AND HOPEFULLY FINALLY HELP TO ELIMINATE IT BY CONVINCING THE SOVIETS THAT THEY WOULD HAVE LITTLE TO GAIN FROM CHEMICAL WARFARE AND THEREBY GIVE THEM INCENTIVE TO JOIN WITH US IN OUR OBJECTIVE OF SEEKING A COMPLETE AND VERIFIABLE BAN ON THE DEVELOPMENT, PRODUCTION, AND STOCKPILING OF SUCH WEAPONS. IF WE ARE SUCCESSFUL IN ACHIEVING THIS BAN, WE WILL BE ABLE, AND IN FACT EAGER, TO TERMINATE THE CHEMICAL WEAPONS PROGRAM.

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SUMMARY STATEMENT BY DR. GOLD

Dr. GOLD. Thank you very much, Mr. Chairman.

First I would like to say that Rich Wagner, my boss, sends his regrets at not being able to be here today. He is cochairing a representation to Great Britain ———. Otherwise he would certainly be here today.

I will briefly summarize our program and then we are prepared to go into as much detail as you would like today.

Whatever we can't give you today, we will certainly provide as soon as possible.

The objective of the Administration is very clear in this area. It is, to eliminate the threat of chemical warfare.

I think all Americans and most of the world view this as a particularly abhorrent form of warfare. President Reagan in his speech before the United Nations said the use of chemical and biological weapons has long been viewed with revulsion by civilized nations. Our objective is clear.

Our policy is firm and consistent with existing treaties. We do not and will not possess biological or toxic weapons at all and we will not be the first to use chemical weapons.

Our strategy is prudent. Certainly the ultimate goal of the Administration's strategy is a complete and verifiable ban on chemical weapons. That is obviously the desired way to eliminate the threat, but I believe it is prudent to realize that achievement of such a treaty will not come quickly and, therefore, we must deter the use of chemical weapons by the Soviets until we can have a verifiable treaty.

The threat is real. The Soviet Union has an unsurpassed capability to wage chemical warfare. They have the weapons; they have the training; they have the doctrine; they have the equipment. For over a decade during the seventies, while the Soviets were improving their capabilities to wage chemical warfare, the U.S. allowed our capabilities to decline until the situation was reached where there is a very serious asymmetry in chemical warfare capabilities.

In order to deter the Soviet's use we must be able to deny them significant military advantage from initiating the use of chemical weapons. Improved protection is a necessary part of the program to deter use. However, it is not sufficient by itself.

I don't think I will have to go into great detail to justify that point, but I am prepared to. It is a very key point and provides one of the two most important supporting rationales for the program.

The reason why defense isn't sufficient is that we do not know how to make a defense that allows our forces to survive and operate on the battlefield without significant degradation of performance in a chemical environment.

It is not only the degradation caused by the protective equipment itself, the degradation of visibility caused by the mask, the loss of tactile sensations caused by the gloves, the tremendous heat burden that the troops have to sustain even in moderate temperature caused by the clothing, and the loss of maneuverability by the boots. In addition there are other activities that units under chemical attack have to do to survive on the chemical battlefield and which further degrade operational performance. Decontamination is the prime example. The encumbrances of protective equipment, the extra activities, the logistical burden of additional equipment: All combine to place severe handicaps on the force under chemical attack.

So if the Soviets were allowed to enforce a chemical environment on our troops while they were able to operate unencumbered by not only protective gear and procedures, they would have a significant and substantial advantage.

Therefore, along with improved protection, we need to have a credible retaliatory force—a force sufficient so that the Soviets would know that if they initiate chemical warfare, their troops would also have to face the same encumbrances and degradation as our troops.

I don't believe anything I have said so far would engender much controversy.

I now come to the most controversial part of the program, at least, to some segments of the public.

That is, okay, we need a retaliatory force; why isn't our stockpile sufficient? Why do we need to procure new munitions? Our current stockpile is not adequate for that task and I will spend a few minutes reviewing the situation with the help of a chart.

[Chart.]

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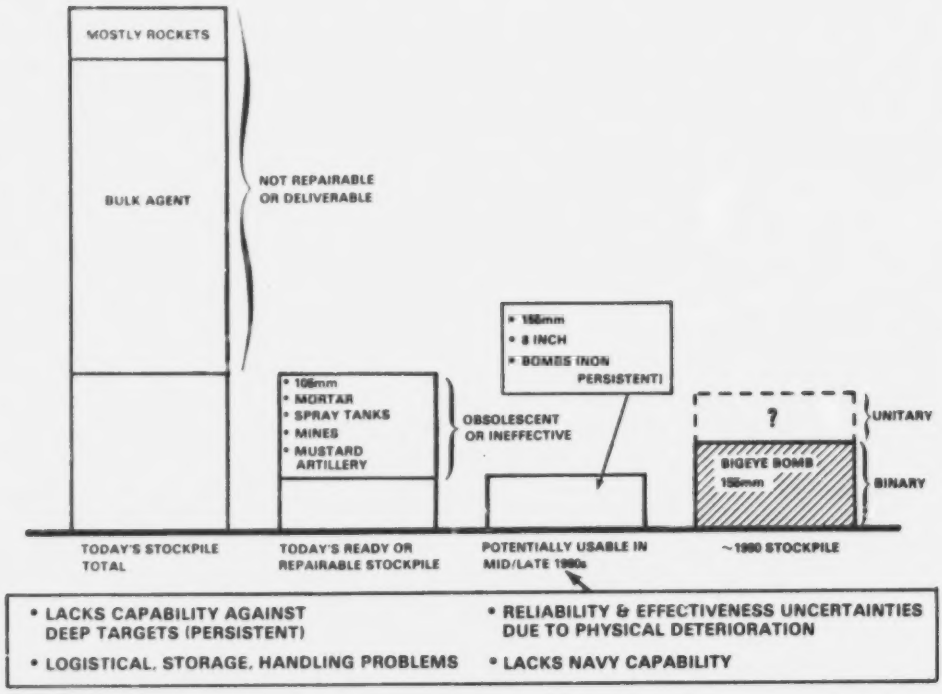
CHEMICAL MUNITIONS STOCKPILE



In terms of the total amount of agent tonnage we have in the stockpile, there is enough. The bar on the left represents the current total stockpile. We have about ——— ton of chemical agent in the stockpile.

The elements in red are elements that are not usable at all, either because they are stored in bulk—that is, no munitions exist for them, or because they are not repairable or otherwise usable.

Over sixty percent of our current agent stockpile is in bulk containers.

Another eleven percent is not usable today because it is either in old rockets for which the launchers no longer exist or in munitions that are not repairable.

So, therefore, over 70 percent of our current stockpile (in terms of quantity of agent) is not usable.

We can divide the remaining 28 percent into two parts. The largest part close to two-thirds of that (28 percent) resides in munitions whose delivery systems are obsolescent or being phased out of the inventory or don't provide an effective delivery means. These include artillery shells for 105 mm howitzers; land mines, projectiles for 4.2 inch mortars; spray tanks for aerial delivery (which makes the aircraft extremely vulnerable to any kind of modern air defense because those planes have to fly low and slow and level for long periods of time), and it includes mustard agents.

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That is the part shown in orange. We now come to the potentially usable part (in yellow) which represents about ten percent of our current stockpile. It is approximately ———.

About ——— filled with non-persistent agent. Their effect is dissipated by wind and weather after a relatively short time. That is not the kind of agent you want to use against rear targets where you want to force him to operate in a contaminated environment in protective clothing.

The other ——— of the yellow part is in our current 155 mm and 8 inch artillery stocks. These are potentially the most useful munitions we have today. However, there is a serious concern about physical deterioration of some of these weapons, particularly artillery projectiles with non persistent agents.

During the last several years in surveillance programs we have observed deterioration of the chemical agent. The major concern is that over the years the acids resulting from agent deterioration will attack the metal shell encasing and eventually make them unsafe to fire.

I will get around a little later to discussing what our plans are to redress our stockpile deficiencies.

So we can't rely on defense alone and we believe very strongly that ——.

Our program is based on those two facts. We believe our program is balanced; and with regard to weapons, restrained. The program has two major components. Improve protection ———.

The budget we are asking for in 1983 is a little more than $700 million for the entire program. We estimate the five year cost to be between $6 to $7 billion.

The bulk of those costs would go for the protective aspects. Over 72 percent of our 1983 funding is for protection, about the same percentage will hold for the five-year period.

About 17 percent of the 1983 funds will support the retaliatory component of the program and the remaining 11 percent would be devoted to demilitarization (getting rid of the old stockpile).

The protective component of our program has itself three elements.

I view training and development of doctrine to be most important in the short term. There is no other area that more significant improvement has been made in the last several years than in the initiation of across-the-board and relevant chemical training.

This has occurred not only on the individual levels in basic and advanced training, but perhaps even more important, it is now being picked up by the units themselves. I believe this is the most significant advance that has happened in the last several years in the CW arena. We are now institutionalizing chemical training at all levels and there is no more important indication that the services take the threat very seriously.

The second element of the protective component of our program is research and development. The research and development spans the spectrum from engineering state-of-the-art technology so we can get needed equipment into the field relatively quickly to very exciting high payoff and high risk endeavors, particularly in the areas of molecular biology.

There are very exciting things you can do in those areas. I am convinced that at the very least by making use of the very high selectivity and sensitivity that you could get by engineering enzymes and molecules which will attach themselves to specific agents that we will have entirely new and very effective detections and warning systems. Beyond that the hope is of course that eventually we can achieve powerful antidotes and forms of medical protection.

The third element of our protective component is procuring and supplying our troops with the quality and quantity of equipment that is needed.

We are prepared to discuss all these areas in detail.

The retaliatory part of our program has two elements to it: The relatively small, but important element in the short term is to do what we can to maintain the potentially useful part of the stockpile. We want to make sure that we have maximum use out of the ———.

The bulk of the funds in the retaliatory portion, of course, goes to the development and procurement of binaries. Our plans now are to produce two binaries over the next five year period, the 155 mm artillery shell with a non-persistent nerve agent which is the type of chemical agent appropriate to use when your own troops may have to soon enter the targeted area and the Bigeye bomb with a persistent nerve agent which is the appropriate choice to insure contamination of the Soviet echelons in depth.

We estimate this binary procurement will be about a billion dollars over the next five years. Often it is reported incorrectly in the press that we will spend $5 billion or more on weapons in the next five years. The sum is representative of the total program cost, the retaliatory (weapons) component would account for about one-sixth of that total cost.

A separate element of our overall chemical program, a formidable and costly activity in its own right, is the demilitarization of the existing stocks. Some estimates of the total demilitarization cost using today's technology exceed two to three billion dollars.

We have an R. & D. effort under way which seeks to find cheaper, more efficient ways of demilitarization. Our near-term focus will be to get rid of those items in the stockpile that pose potential safety problems, primarily the M–55 rockets.

That is a relatively brief summary of the program. My Service colleagues and I have a formidable management challenge in chemical activities. We have an area that has basically been neglected for over a decade. We have institutions and organizations that have been allowed to decline and deteriorate. We have people that have not been asked or requested to produce, on time and with quality. Suddenly the nation has recognized a serious threat.

Our job is to turn these institutions and organizations around and get them in the kind of health with the resources that they need to meet the very stringent demands that are being placed upon them.

Thank you very much, Mr. Chairman. That completes my summary.

Organizational Changes for Chemical Warfare Programs in OSD

Mr. Addabbo. Dr. Gold, you mention in your statement that organizational changes have been made for chemical warfare programs within the Office of the Secretary of Defense. Would you briefly summarize these changes?

Why were the changes made? What will they accomplish?

Dr. Gold. The organizational changes in OSD were the creation of my office. I started March 1st, although it seems like I have been on the job far longer than that.

It is amazing how quickly three and a half months go by.

The changes were made because of a recognition that this was an important topic. It is a very public issue, controversial in some respects, and because of the reasons I mentioned before including the need to quickly redress our deficiencies.

Mr. Addabbo. I am interested in the changes that were made. How does the new management structure differ from the previous one?

Dr. Gold. Previously there was not an established organization in OSD to handle and manage chemical warfare activities. Now there is. It is my office.

I report to the Assistant Secretary of Defense for Atomic Energy, Dr. Wagner. I have a staff. We are now the component in OSD for all chemical matters.

We provide the defense guidance. We work with the Services on their POMs. We do all those things with regard to the whole chemical program that OSD does with other programs.

Mr. Addabbo. Do you have additional employees?

Dr. Gold. My office is staffed with three professionals, myself and two military officers I don't know whether the formation of this activity was balanced by reduction elsewhere in OSD.

There was a strong recommendation of the 1980 Defense Science Board summer study which said that OSD——

Mr. Addabbo. Do you have authority over your own budget and the R. & D. policy?

Dr. Gold. To the extent that OSD has authority over the budget process, we in our office have authority on the chemical activities.

Mr. Addabbo. You did pretty good.

Dr. Gold. Recognizing our office has been established for three months.

Mr. Addabbo. I thought OSD had the authority. Are you telling me OSD has completely abrogated the authority to the military?

Dr. Gold. I would not say that. OSD has authority. The process itself involves OSD working closely with the Services. My impression so far is that in the chemical area it is working very well. I have seen almost no evidence of service parochialism in this area. I have been very pleased at the openness and cooperation of not only the services, but of the other organizations within the Administration. There is a recognition this is a neglected area and that we have to get our act together. There is a very cooperative spirit.

Mr. Addabbo. How many additional employees will be hired for these offices? Will there be any commensurate reductions in the Services?

Dr. GOLD. The office of the chemical focal point is headed by a senior executive service civilian supported by two military officers and a secretary. There are no reductions planned in the Services.

Mr. ADDABBO. What improvements in the management of chemical warfare programs will result from the new organization?

Dr. GOLD. Prior to the establishment of a chemical focal point within the Office of the Assistant to the Secretary of Defense (Atomic Energy), there was no single entity with overall responsibility for chemical warfare programs within the Department of Defense. As a result the Services were each going their own way with little coordination and differing objectives. The role of the chemical focal point will be to provide overall chemical objectives and guidance to the Services, to assess Service programs to meet those objectives, and to make program adjustments as required. Additionally, the focal point is responsible for articulating chemical programs both inside and outside the Administration. It is expected that U.S. chemical capabilities (protective, retaliatory, and demilitarization) will improve significantly over the next several years. The focal point will assure that these improvements are realized as rapidly and as efficiently as possible.

CHEMICAL WARFARE POLICY

Mr. ADDABBO. What is our national policy on the use of chemical weapons within the NATO Alliance?

Dr. GOLD. The NATO policy on chemical weapons is to have a chemical retaliatory capability. That is part of MC 14-3 and the supporting document although the exact words are secret. The U.S. is the only country in NATO that maintains a chemical stockpile.

Mr. ADDABBO. Under that NATO Alliance agreement, will we be able to stockpile chemical weapons in the NATO countries?

Dr. GOLD. We have chemical weapons stockpiled in Germany today. There are no current plans to deploy the binary weapons in any foreign country. Consideration of such deployment in NATO countries would of course involve discussions with our NATO allies.

Mr. ADDABBO. Will it be necessary to obtain their permission?

Dr. GOLD. Yes.

Mr. ADDABBO. In the event of hostilities, would it be required that we obtain their permission for use of chemical weapons?

Dr. GOLD. On their territory?

Mr. ADDABBO. On their territory.

Dr. GOLD. ———, but it can be assumed to mean retaliation is allowable in any NATO country. Further, initial request for chemical weapon release would be processed through NATO military channels.

Maybe one of my colleagues could speak further to that.

General FULWYLER. In the first place, our national policy, Mr. Chairman, is no first use of chemical weapons. Therefore if we are going to be using them, the President must first authorize any use after enemy initiation. Likewise, he must authorize release of U.S. munitions to our allies if they are going to be using them. Thus based on our policy, it would mean we must be subjected to first use before we could retaliate and then only after receipt of Presi-

dential approval. In which case, we would use them in accordance with approved NATO release procedures and plans.

Dr. GOLD. The question was not allied use. It was U.S. use.

Mr. ADDABBO. U.S. use.

We know with nuclear weapons there is a certain chain of command. Will that exist with chemical weapons?

Dr. GOLD. Absolutely. Presidential approval is required to use chemical weapons.

STATUS OF NEGOTIATIONS WITH THE U.S.S.R.

Mr. ADDABBO. Since 1977 there have been negotiations with the Russians on a comprehensive ban on chemical weapons. What is the status of those negotiations?

Dr. GOLD. The status of the negotiations with the Soviet Union is that they are in abeyance ever since the 13th session in 1980.

We have entered the arms control arena on the multilateral forum within the United Nations Committee on Disarmament. So there have not been negotiations with the Soviet Union since 1980.

I have with us today Mike Macdonald from the Office of the Under Secretary of Defense for Policy and Mr. Leonard from the Department of State. If there is further interest in this topic, we can cover it here.

Mr. ADDABBO. Let me give them, either or both of them, this question.

When we first were asked to start the funding of the chemical weapon production program, one of the justifications given by DOD was that if we started, perhaps we can move the Russians further or restart negotiations on a ban. Now we are into our second or third year of funding and as I stated before you are actually proposing to start production.

Has this caused any change in the Soviet attitude towards negotiations? Mr. Macdonald?

Mr. MACDONALD. Let me say the Soviets have surfaced a treaty proposal at the United Nations. While it is almost impossible to say what motivates or drives them, I think a plausible case can be made for their increased seriousness at this time, stemming from their perception of our increased seriousness at righting the imbalance in our respective capabilities.

I think, Mr. Chairman, one can say it is difficult to detect a really substantive change thus far in the Soviet position, but just the other day as I noted earlier the Soviets did deposit at the United Nations a draft treaty banning chemical weapons which I think we can take as evidence of a Soviet tactic to try and head off our modernization program. They were able in the past to head off U.S. CW modernization successfully for an extremely long period while we unilaterally undertook not to move forward on chemicals because we were negotiating with the Soviets. Now that we have moved forward with the decision to modernize, I think the Soviets are again being moved to try to block that.

In that sense, I think we have moved the Soviets somewhat. They have attempted, of course, to take the high ground by putting a treaty forward and being able, as a result of that to play and exploit certain propagandistic aspects of taking the initiative to abol-

ish chemical weapons—while at the same time, of course, we know they have maintained for themselves an extremely potent military capability in this area.

My judgment would be that as a result of moving toward the modernization of our own retaliatory capabilities, we are going to stimulate a much more serious dialogue between ourselves and the eastern bloc on the resumption in due course of negotiations to get to a prohibition.

Dr. GOLD. The issue, of course, is verification.

The Soviets, during the negotiations, discussions in the seventies, were unwilling to really address seriously the verification issues and the on-site conditions needed for that.

Mr. MACDONALD. I think it is clear, Mr. Chairman, as long as we remain as we were unilaterally not moving forward, we gave gratis to the Soviet Union certain advantages, and we did not increase our negotiating leverage. But it was very difficult to get a direct link between modernization and negotiating leverage in the committee on disarmament or in the bilateral talks. But I think there can be no question in terms of past history that when you do have the capacity militarily to either co-equal or answer your adversary, then he listens much more carefully to the propositions that you make.

Mr. ADDABBO. With the present stockpiling of our own chemical weapons, do we have any capability at all?

Dr. GOLD. Much less than we need, I think, to provide an effective deterrent. ——— a capability to deliver persistent agent in depth, that is, beyond artillery range. We cannot subject him to a contaminated environment throughout his whole area of operation as he can to us today.

We have no effective method of doing that today so there is a very serious deficiency in our current deterrent posture. We have some capability today, particularly in our short range systems, our 155 mm and 8 inch artillery, but, as I mentioned before, particularly with the nonpersistent agents, which are the ones we want to use for artillery, there are serious concerns about the continued health of that stockpile, as you go into the late eighties.

In answer to your question, yes, there is some capability today, but with a very significant lack our inability to deliver persistent agent effectively beyond artillery range.

LACK OF INFORMATION ON SOVIET CHEMICAL WARFARE

[CLERK'S NOTE.—Classified discussion removed.]

Mr. ADDABBO. Another item we lack is data on types and quantities of CW agents at ———. If we do not know this, how can we claim to know the nature and size of the threat?

Dr. GOLD. We know a great deal about the Soviet threat, including their chemical agents, their weapons and agent fill, their weapon effects data, their doctrine for chemical weapons employment, and a considerable amount about their chemical protective capabilities. ———.

However, based on what we do know, prudence dictates that we must take very seriously their capability to wage offensive chemical warfare.

Mr. ADDABBO. The Army says we need data on "scenarios and conditions under which the Soviets and their allies would use CW weapons," and "Soviet perceptions of the effectiveness of CW weapons in small-scale conflicts and in general war." Once again, if we lack this data, how can we claim to be able to assess the threat?

Dr. GOLD. We know a great deal about Soviet doctrine for chemical use. Their doctrine envisages the use of chemical warfare and acknowledges its value, particularly when used in massive quantities and with surprise. They view chemical weapons as highly effective and believe they can achieve high casualty rates against protected forces because of surprise and deficiencies in the defenders' training and equipment. Based on Southeast Asia and Afghanistan, we also know the Soviets see chemical weapons as useful in small-scale or guerrilla wars. Of course, we would like to know much more about Soviet chemical capabilities and intentions; however, we know enough to realize that we must take the threat very seriously.

USE OF CHEMICAL/BIOLOGICAL WEAPONS BY U.S.S.R.

Mr. ADDABBO. In last years's hearings we were told about the evidence of Soviet use of mycotoxins, so-called "yellow rain", in Laos, Kampuchea and Afghanistan. The evidence of this use was leaf samples found in Kampuchea. It was described as strongly circumstantial with additional analyses and collaborative evidence required for proof.

What additional evidence have you gained since last year of Soviet use of chemical/biological weapons?

Dr GOLD. Once again, that is not the responsibility of my office. Let me make a brief statement again, and then I can turn it over to the people who know more.

There has been additional evidence found this year, so certainly with regard to the use of these agents, I believe the evidence has gone from circumstantial to conclusive.

One of the reasons why my office and I personally am not involved is I don't view this largely as a chemical issue. I am very concerned, of course, as a focal point of the chemical program on what we learn technically from Southeast Asia. I want to make sure our protective clothing and equipment can respond to whatever new agents the Soviets are putting in the field.

However, Soviet use has far wider implications than just impact on our chemical program; in particular, the apparent Soviet willingness to violate a major arms control treaty. If the American public views this merely as a chemical issue, I believe they will miss the point of one of the most disturbing actions of the last several years. Now, let me turn again to Mike or to the State Department.

State has the lead in this area. This has not been a Department of Defense project.

Mike?

Mr. MACDONALD. I would like to use my institutional memory, if I may. While I have not been directly connected with the detailed technical work on the analysis of CW use, there can be no question we have moved from a period in which it was very difficult for us

to persuade a number of important people that we had conclusive evidence to a situation in which our evidence is so strong now that the President himself, in his speech before the SSOD at the United Nations, formally accused the Soviet Union of using chemical weapons.

Now, the latest evidence that we consider capping the earlier evidence is the discovery of trichothecenes and its metabolite in the blood of four Kampuchean refugees from a chemical attack.

In addition to that, the Australian Government, Canadian Government, Swedish Government and French Government all engaged in one way or the other, looking at evidence that is available.

The Canadians have just delivered a report to the United Nations which in essence supports the major conclusions of our own reports, and you will recall yourself that Secretary Haig presented to the Congress on March 22 a rather voluminous paper which gave in great detail the various aspects of the evidence we have assembled.

The Japanese, the Australians, the Canadians, and the Swedes, of course, are working independently in the context of the United Nations' committee investigating CW use, and they are not working for us. In this sense their analyses are independent. So, to the extent that a major ally or another nation is able to separately get evidence that corroborates the evidence we have, then we strengthen immensely, in my judgment, the assertions we have made.

Part of the difficulty has been, of course, that some people have in the past felt we made these allegations as part of the context of "the cold war", but that is not so. We made them because we got the evidence that they were using chemicals and now I think without question we can carry that allegation and win our case in the court of world public opinion.

Mr. ADDABBO. It raises a concern in my mind. Myself and other members of the committee and the staff were in Pakistan at the Afghan border. We were near the Kampuchea border. Neither the CIA nor anyone else could give us any direct evidence or would say they had direct evidence of use.

Again, it was circumstantial, but no one could give us or would give us any definite statement of actual known use by the Russians.

We signed and ratified the Geneva Protocol in 1975. Has the USSR ever signed those?

Dr. GOLD. Yes, they have signed both the Geneva Protocol and the Biological and Toxin Weapon Convention.

Mr. ADDABBO. What action can be taken against a violator of those accords, if any?

Dr. GOLD. Mike?

Mr. MACDONALD. The Soviets, of course, were ahead of us in ratifying the Geneva Protocols. We didn't ratify it until 1975. Most of the major powers who ratified it ratified it with reservations which in essence turned the Geneva Protocol into a "no first use" exercise, but—I have forgotten the second part of the question.

Mr. ADDABBO. What punitive action can we take?

Mr. MACDONALD. Punitive action, of course, is very limited namely because the applicability of the Geneva Protocol is limited

to states parties to the protocol itself. Also it applies to the use of chemicals in war and one of the unfortunate aspects of the current use of chemical weapons is there is no formal war declared in Afghanistan, Cambodia, or Kampuchea. So in a very narrow legal sense you can probably say the Geneva Protocol doesn't apply.

On the other hand, there has evolved over time what we call customary international usage. In that sense there can be no question that to the extent the Soviet Union has supplied chemicals to others who have used it, for example, in Kampuchea and Cambodia, or have used chemicals themselves in Afghanistan, that then they have breached customary international law.

Dr. GOLD. There is no question, also, with regard to the toxins. Even the possession is outlawed under the Biological and Toxin Convention.

Mr. MACDONALD. That is a second convention and also it is one we and the Soviets are parties to. We are accusing the Soviets of, in fact, having violated it directly. We have not accused them directly of violating the Geneva Protocol itself.

The BWC we have. We did it on the basis of two aspects of Soviet behavior. One is the accident that occurred at Sverdlosk, in which pulmonary anthrax spores escaped from a camp where they had research activities going on in the biological warfare area.

The other was the use of toxins, trichothecenes in Southwest Asia.

Mr. ADDABBO. The gentleman from Florida?

DIFFERENCE BETWEEN BIOLOGICAL AND CHEMICAL WEAPONS

Mr. CHAPPELL. Dr. Gold, let me be sure I understand our policy. It is that we will not, under any circumstances, use biological or toxin weapons?

Dr. GOLD. Or even possess them.

Mr. CHAPPELL. We are talking strictly about chemicals?

Dr. GOLD. Yes.

Mr. CHAPPELL. Would you tell me the difference between toxins and chemicals?

Dr. GOLD. A toxin is a poisonous chemical substance that derives from living (biological) processes for example, from fungus, so you grow it rather than manufacture it. It probably doesn't make a difference to the recipient.

Mr. CHAPPELL. That is what I was going to ask you. Why do you call one—it is still a chemical, isn't it?

General FULWYLER. They stem from living organisms.

Dr. GOLD. In that regard, since they stem from living organisms, it is related to the biological realm, but the finished product is closer to what we know as a chemical, which is a manmade, manufactured substance. It is a technical and legal points; legal because of existing treaties. Toxins can also be manufactured; however, the biological and weapon convention outlaws toxins whatever their origin or method of manufacture.

Mr. CHAPPELL. How does the chemical differ from the biological?

Dr. GOLD. In general, with the biological, the living substance, their effects takes place over a much longer time period.

Mr. CHAPPELL. Wouldn't you deliver it in a liquid or gaseous state, too? Isn't it a chemical, too?

Dr. GOLD. You can deliver it almost any way you can deliver chemical agents. Generally with the chemical weapons, particularly the nerve agents that we and the Soviets have developed, the effects are, very rapid. Therefore, they are suitable for the battlefield.

Mr. CHAPPELL. Is nerve gas——

Dr. GOLD. That is a chemical.

Mr. CHAPPELL. Help me understand what the chemical is. What is included in the chemical?

Dr. GOLD. Our chemical agents are generally stored and delivered in liquid form. Some of them volatize easily so they are quickly changed to vapor, particularly if the temperature is high. Then they could enter and harm the body by either inhalation or going through the skin into the bloodstream. Eventually they disrupt the communication process of the nervous system.

Biological agents are living organisms. Plague, botulism, the diseases of history, generally those are considered as being not effective on the battlefield because there is an incubation period, and the results might not occur for days.

TYPES OF CHEMICAL AGENTS

Mr. CHAPPELL. How many chemical types do we have in our inventory?

Dr. GOLD. About a half a dozen today, in round numbers. Including two different types of nerve agents.

Mr. CHAPPELL. How is that taken in? Through inhalation?

Dr. GOLD. Either inhalation or actually through the skin. So, an unprotected person, even with a gas mask on, can be attacked by some of these agents through the skin. Depending upon the properties of the molecule, there are different attack machanisms on the body. Some agents are more effective when they are breathed. Some are effective when they can attack through the skin.

We also have mustard agent, which is the World War I type of agent which attacks the skin and causes blisters.

Mr. CHAPPELL. Can you go ahead with the other types that we have? I guess the ultimate question——

General FULWYLER. You have two other types: phosgene, which we have sold for commercial use, and BZ, an incapacitating agent, which we are preparing to destroy. To summarize, we really only have GB and VX, two types of nerve gas, which we consider usable today. The Soviets have more.

Dr. GOLD. There is a blood agent, too; cyanide, in the Soviet's stockpile although not in ours.

Mr. CHAPPELL. What are we getting down to? Four?

Dr. GOLD. We are reducing the size of our stockpile. We are going from a stockpile which has about ——— tons of agent, about 15 different types of weapons and a half a dozen types of agents, to a stockpile that will be considerably smaller, maybe a third of the size and that will have far fewer types of weapons and agents.

We have two binary weapons in the plan now. Depending on the outcome of further arms control and deliberations within the Pen-

tagon, eventually we may have three or four different weapons with and maybe two or three basic types of agents.

Mr. CHAPPELL. In other words, there is not one chemical that will do it?

Dr. GOLD. Correct. It is not so much a question of lethality, but rather suitability on the battlefield.

Mr. CHAPPELL. Does one chemical suit better on one battlefield than the other?

Dr. GOLD. Yes. The nonpersistent type is appropriate if your troops may have to occupy that ground soon. In this case, you don't want a chemical around in lethal form for days. The binary artillery shells will be filled with a nonpersistent agent. It volatilizes very easily, turns to vapor, and then dissipates generally within an hour.

General FULWYLER. That is the agent GB, sir. It would do its harm through the respiratory system. That is the basic difference between the persistent and the nonpersistent agent. The persistent agent has a higher density, tends to be thicker, and will stay around longer. Therefore, it would be employed on areas of the battlefield which we wish to deny or restrict the enemy access or freedom to use that ground.

In the case of persistent agents, lethal effects are caused by exposure of the skin to the agent. It is absorbed through the skin and attacks the nervous system by that route.

We would not use persistent agent in those areas that we anticipate going through soon or that we would have to fight over. We would use the persistent agent primarily on the deeper targets to deny, to delay, to disrupt, and degrade enemy echelons in depth.

Dr. GOLD. Persistent agent can stay for days or even weeks, depending on the agent.

Mr. CHAPPELL. Or to squeeze him into a corridor?

General FULWYLER. That is right, to canalize him.

Mr. CHAPPELL. The best way to understand it is there are two different types?

Dr. GOLD. In our binary weapon plan, right.

Mr. CHAPPELL. How many types of each one of those do you have?

Dr. GOLD. One of each.

General FULWYLER. That is the beauty of going to the binary program, sir.

DELIVERY SYSTEMS FOR CHEMICAL WEAPONS

Mr. CHAPPELL. Now we come to the delivery system. We know right now we are deficient on the chemicals themselves, right?

Dr. GOLD. The major deficiency is the delivery systems themselves. It is a problem of matching delivery systems with the right type of agent.

Mr. CHAPPELL. I understand from your statement here, you go into 60 percent of protective devices?

Dr. GOLD. Most of the money supports protective measures.

Mr. CHAPPELL. I will come to that in a moment.

The other is to buy additional chemicals, but that is only 9 or 10 percent, right?

Dr. GOLD. Let me summarize our five year cost projection. About two-thirds of our money will be for the protective side. The remaining one-third will be about equally divided between procurement of the new munitions, the binaries—about one-sixth of our funding—and the other one-sixth will be to get rid of the old stockpile, the demilitarization.

Mr. CHAPPELL. What is the real meaning of binary?

Dr. GOLD. A binary weapon separates the chemical agent into two relatively nontoxic parts, so you do not have a chemical agent until these two separate chemicals are mixed.

The artillery shell, for example, is made up of two canisters containing two different chemical materials. The firing of the shell forces a mixture of those components, and then you have the standard nerve agent formed as it is on its way to the target.

Mr. CHAPPELL. How many different delivery systems do we have and what are we advocating?

Dr. GOLD. Now we have on the order of 12 delivery systems.

Mr. CHAPPELL. Is that necessary to have so many?

Dr. GOLD. No, we are going for artillery and a bomb at the moment. As I said before, I think we will go on the order——

Mr. CHAPPELL. One airborne delivery and one artillery?

Dr. GOLD. In our current plans now we have those two. I believe, depending upon how long this program continues, we could end up with two battlefield support type systems and eventually we would like to supplement or replace the gravity Bigeye bomb with a stand-off weapon.

So we are talking on the order of four or five different kinds of systems opposed to the 12 we have today. Today we have land mines, 4.2-inch mortars, three different kinds of artillery shells with six different kinds of agents, three different kinds of bombs, 2 aerial spray tanks and the obsolete rockets.

During the seventies we got rid of systems. We had Honest John with chemicals. We had cluster bombs. During the fifties we built up a very diverse and large stockpile, the same as we did in the nuclear arena.

Our plan now is to have a much more streamlined stockpile in terms of quantity of agent, of numbers of munition and of types of agent.

Mr. CHAPPELL. You are going to go obviously short-range.

Dr. GOLD. Artillery is short-range. The Bigeye bomb is the long-range.

Mr. CHAPPELL. Are you going to attempt to use it in any of the missiles?

Dr. GOLD. We have R and D projects.

Mr. CHAPPELL. On a cruise missile, anything like that?

Dr. GOLD. We will be looking at some of those ———.

The Army does have R and D projects looking at the multiple rocket launching system and the corps support weapon. These are in the R and D phase now. They will not be ready for procurement during the five-year period.

General FULWYLER. Mr. Chappell, looking down the line, some Army delivery systems that may come into the inventory include the MLRS, CSWS and a new 8-inch projectile. Some of those we

feel it is only prudent to see if these systems have an application for binary munitions.

Today, I personally see the greatest requirement to be the use of chemical munitions for the deeper targets. Because that is where we——

Mr. CHAPPELL. Rear echelon area?

General FULWYLER. Yes, sir. That is where the Russians today hold us at greatest risk because that is where their follow-thru potential is and where so many of their missiles have the capability to reach our deeper areas. Today we do not have such a capability. The bulk of our chemical weapons are short-range.

That is not to say that we do not require a short range capability. We do. But I feel certain that we don't need near the capability in the short-range as we do in the mid and deep, longer range weapons.

Mr. CHAPPELL. You can get to his staging areas and his lifelines?

General FULWYLER. You hit logistic areas, airfields, command centers, and certain routes. Those targets are going to be his onus.

Mr. CHAPPELL. How much progress have we made and how much progress are we going to be able to make with the budget you propose? Just in the areas of chemicals and the delivery systems?

Dr. GOLD. This budget will allow very significant progress. This budget during this five-year period will go a long way towards giving U.S. forces a credible stockpile. It will give us a modern 155 artillery round, and it will give us a good part of the number of bombs that we need.

Mr. CHAPPELL. Actually through procurement now?

Dr. GOLD. Yes. Both of those programs start putting out weapons in ———. We think it is very important—particularly as General Fulwyler said—to be able to hit the deep tactical targets. We have accelerated the Bigeye program. Starting in ——— we will have hardware.

Mr. CHAPPELL. We know the chemicals. We don't have to do any research on that. We have the chemicals. We know what we want. It is a matter of buying quantity.

The second thing is to get the delivery systems, and we know now what we want on that. Is that correct? This will start the procurement on the new delivery system?

Dr. GOLD. In the 1983 budget there is money to start the procurement.

Mr. CHAPPELL. When will that be ready for deployment?

General FULWYLER. The 155 mm projectile will not be produced until the ———. Hopefully the same time frame for the bomb.

Dr. GOLD. Sometime in ———.

General FULWYLER. Mr. Congressman, I have been in this program almost from the beginning, approximately three years. I must say the budget this year is a culmination of something terribly important and is probably the best sign I have seen in a long time.

For the first time in a long while we are being realistic. We are beginning the development of a credible retaliatory capability which we have not had in the past.

You see much of our money is in defensive R and D. We are finally getting around to providing our soldiers, sailors, and airmen,

wherever they are, the necessary defensive items and equipment that they are going to require if we are suddenly surprised by chemical attack. We haven't been able to do that in the past.

The other aspect of our R and D is looking down the line at other possible binary retaliatory systems we can use. At the same time, trying to find a way to get rid of the current muntions and agents that we have now, which we need to do desperately. Indeed, disposal of our current stockpile is a national problem which should be managed resourced accordingly.

CHEMICAL PROTECTIVE EQUIPMENT

Mr. CHAPPELL. One final area; that is, protective equipment. Where do we stand on that? How much progress are we going to make with what is contained in this budget?

Dr. GOLD. There are considerable deficiencies in our posture. Our objective with regard to protective equipment is to assure our forces can survive and then sustain operations with minimal degradation of performance.

I believe we have gone a long way to assure that they can survive, at least an initial attack, ——— shortfalls across the board in the five major areas in protection. These areas are; individual protection (i.e. the clothing, masks etc.) collective protection, (the need to give our people a place to go—for example, maintenance crews who might be repairing runways that have been chemically contaminated—and who need a place to rest and recuperate free from a chemical environment). ———.

The third area is detection and warning. ———.

The fourth area is decontamination. ——— deficiencies exist in terms of both quantity and quality of equipment.

The fifth is the whole medical area.

When you ask in terms of our current posture, the deficiencies across the board——

Mr. CHAPPELL. We are in terrible shape!

Dr. GOLD. Now with regard to our plan, I believe our plan will redress much of the current deficiency. Much of it depends upon the R and D programs we talked about. We are coming off more than ten years of neglect in this area. Some of these items are not on the drawing boards ready to be put out.

Some of these areas do not require high technology, e.g.: collective protection. We should be able to get collective protection into the field pretty soon. There are development projects very near completion. All three services have plans to significantly enhance their collective protective posture.

The medical area represents potentially a higher payoff, and also higher development risk. At the end of the five-year period, we plan to have sufficient quantity and quality of equipment to allow our troops to sustain operations for weeks although probably not at the performance level that we would like. The elimination of degradation of performance would be more than what we think is ultimately possible.

Mr. CHAPPELL. How much are you asking in this budget?

Dr. GOLD. For defensive, about $510 million; $236 million of that is for research and development. Again, the research and develop-

ment is absolutely vital. We have to re-establish the technology base in this area. Part of our knowledge of what the Soviets are doing will come from intelligence, but also from re-establishing our own technology base.

Protective R. & D. is a vital part of the program and one I hope where we will see very significant fruits in the years to come.

Mr. CHAPPELL. Your total budget request is how much?

Dr. GOLD. About $710 million. A little more than $500 million or two-thirds is in the protective area. Over the next five-year period we will be asking for $6 to $7 billion for the entire chemical program, about two-thirds of that being in the protective area.

General FULWYLER. This sounds like an awfully high number, Mr. Congressman. What that number represents is the 15 years that we didn't do anything. People ask why we are spending so much money in RDT&E and not in procurement. The answer is very simple. When we haven't done anything with the technology and industrial bases for so long, there is nothing out there to procure. We have to develop it before we can procure it and that takes time and dollars.

Mr. CHAPPELL. Of course, the individual protective gear we keep hearing so much about is so cumbersome.

Dr. GOLD. Improvements are possible in all aspects. It is not only cumbersome, but there is a tremendous heat burden on the wearer.

I have had the fortune, or misfortune, through my months on the job to suit up in protective gear. I can tell you from personal experience that it is not a fun or comfortable experience, particularly in moderately warm temperatures. There are R and D programs to try to see if we can combine the needed protection with something that doesn't provide this tremendous heat build-up.

General FULWYLER. I attended a general officer level meeting all morning looking specifically at the overgarment problems, and establishing milestones for improving that garment. Making a garment that has less heat stress, one that provides adequate protection but still less cumbersome than the one we have now is a priority need. I think we are making significant progress in that area.

Dr. GOLD. One of our management jobs is to assure a very close communication between the user and the research community in this area. Again, we haven't thought about this area for many years. We are going to have to iterate some of the steps in the development processes more rapidly than we have to assure timely feedback from the users.

We are going to have to get some of these items out and give the user a chance to find out how it really works in the field. Nobody knows what the best answers are. We don't get a set of requirements that we all agree to, and that specifies the best way to operate on the chemically contaminated environment.

We are paying for 15 years of neglect, so it is not only building the R and D base, but at the same time it is implementing this training and developing doctrine as I have already mentioned assuring that all participants in this process talk to each other frequently.

General FULWYLER. We always have to keep in mind, the soldier. We can't compartmentalize and say we prepared him just for this chemical and just for that. We have to remember that the next bat-

96-942 O - 82 - 19

tlefield very likely is going to be what we refer to as an integrated battlefield. That means on that battlefield we are going to have conventional high explosives, chemical contamination, and we are going to have nuclear radiation. That is the environment that the soldier is going to have to fight on if that battle comes.

What we have to do is everything possible to best train and prepare and equip that soldier for all those phenomena. If we don't, we are going to lose.

BIGEYE BOMB PRODUCTION

Mr. ADDABBO. Dr. Gold, you mentioned the Bigeye. The information given to the committee shows on the funding through 1989, it appears $25.7 million is requested for Fiscal Year 1983 and $104.6 million is requested in Fiscal Year 1984. Are those correct?

Dr. GOLD. I will provide that for the record.

[The information follows:]

The $25.7 million is the amount of Navy procurement funds in FY 83, of which $12M is for procurement of BIGEYE and $13.7M is for procurement of equipment to make BIGEYE components. There is also about $10M of Army funds for QL production equipment. The fiscal year 1984 figure should be $110.2M for Army, Navy and Air Force procurement funds for BIGEYE production, plus there is $34M Army funds for BIGEYE facility equipment.

Mr. ADDABBO. Why would you be asking for production funds when approval for Service use will not be achieved until April of 1984 and you still have $19.1 million in Navy R and D remaining to be done and when actual operational testing and evaluation will not be completed until November 1983?

Dr. GOLD. There are two parts of that question.

One concerns the way we procure munitions. In the total package of procurement, we budget money for all components' procurement and for final loading, assembling and packing in a single year to try to get the complete shell a few years later.

However, I think the gist of your question with regard to Bigeye is why are we waiving some of the normal processes for this program. The reason is we put very high priority on the Bigeye. As I said before, it fills what we consider the critical gap in our retaliatory posture.

Mr. ADDABBO. That is if it works. It is unusual to go into production before you have Service approval and with such a tremendous amount of R and D still left.

Dr. GOLD. There is not a tremendous amount of R and D still left. There is R and D this year.

Mr. ADDABBO. Your operational testing and evaluation would not be completed until November 1983?

Dr. GOLD. There has been some concurrency of activities here. The Navy and the Army believe this is a schedule that has a high chance of meeting our requirements of having full-scale production start in ———.

Let me turn it over to Admiral Compton.

Admiral COMPTON. As far as the reason for the——

Dr. GOLD. The question was why are we doing a number of steps concurrently on the Bigeye rather than the normal procedure. My answer was that we in OSD put very high priority on this program. We asked the Services to come up with a schedule that met what

we considered to be a real need and yet did not represent a very high-risk schedule.

Admiral Compton will describe the Navy program.

Admiral COMPTON. What we really have is a set-up of two production lines, one for prctotype and one for low rate of production.

What we have in this budget is an amount for tooling to start that first low rate of production so that you would have a capability. As Dr. Good points out, there is some concurrency in the program. We feel the risk is acceptable if you look at the threat we currently face.

BINARY WEAPON PRODUCTION FACILITIES

Mr. EDWARDS. Turning to the production facilities for the binary weapon, in fiscal year 1981 Congress appropriated $3.1 million in military construction and $20 million in Procurement of Ammunition, Army for facility construction and production equipment for the 155mm GB-2 binary artillery projectile.

When was this facility project begun, and when will it be completed and proven out?

Dr. GOLD. The facility construction was begun in the fall of 1981 and should be completed towards the end of 1984. It should be ready to start hardware coming out in ——— as General Fulwyler said before.

Feel free to jump in.

General FULWYLER. That is correct.

GB-2 ARTILLERY PROJECTILE PRODUCTION

Mr. EDWARDS. What other production facilities are required for the GB-2 and when will they be completed?

Dr. GOLD. None. There are modifications to the shell production facility at Louisiana ammunition plant, but no new production facility.

Mr. EDWARDS. The Fiscal Year 1983 budget includes $18.4 million for initial procurement of the GB-2 projectile. How can the projectile be manufactured if production facilities are not completed until 1984?

Dr. GOLD. Again, this is standard procedure in ammunition procurement, when in order to have everything ready on time, you fund for both equipment and procurement in the years appropriate for the lead time involved. In these cases, we are talking about the better part of two year's lead time.

General FULWYLER. We are finding out, Mr. Edwards, for the production of regular, conventional projectiles the lead time on many of the metal parts is getting longer and longer because there are other services, and in some cases, parts of society in competition for some of the same materials. So, that is what drives us more than anything else to the lead time reflected in the program to get necessary parts.

Mr. EDWARDS. Incidentally, do you happen to get any of that metal from other countries?

General FULWYLER. I don't know. I rather doubt it. However, there are many instances where we do have to go abroad for some of the precious metals, particularly.

Mr. EDWARDS. The staff tells me the lead time for ammunition generally has been going down rather than up.

General FULWYLER. It depends on what kind of ammunition it is and what parts are required. For instance, in our nuclear program, particularly, the least time for some of the special metals that go into construction of devices is increasing. On the regular conventional projectile, I don't know whether it is going up or down. Hopefully, it will go down as we modernize our industrial base. I do know there is significant lead time.

Mr. EDWARDS. This particular system is just a piece of metal, isn't it, a piece of brass?

General FULWYLER. Yes, the metal shell body is.

Mr. EDWARDS. Same kind of thing I used to fire when I was in the Marine Corps 100 years ago, basically?

General FULWYLER. Basically.

Mr. EDWARDS. Why would the lead time be so great on that?

General FULWYLER. Probably because of binary components. I just know we have a significant lead time on that.

Mr. EDWARDS. Can you put something in the record?

General FULWYLER. We would be happy to check that.

[The information follows:]

The projectile metal parts are not the pacing components and can be produced within normal procurement leadtime. The longer lead components are one of the feedstock chemicals, methyl phosphonic dichloride (DC), which is used to make the binary chemical precursor difluoro (DF), and the polymer, Marlex, which is used to fabricate the inner sleeve of the metal cannisters that will hold the DF and the second binary component, an isopropyl alcohol—isopropylamine mixture. The chemical DC has only been produced in industry in laboratory quantities and the capability must be expanded to meet binary production rates. In addition, the only company able to make the Marlex is not currently producing the material, and will have to alter his plant operation to meet our needs; he requires a minimum buy.

Dr. GOLD. It is not just the metal parts. There are metal and plastic canisters as well as chemical feedstock. We have to assure all of this comes together in the loading facility.

Mr. EDWARDS. I should think in this day and time with a lot of industry pretty hungry you have a lot of people to turn to right now without a whole lot of lead time.

How many projectiles will be procured with the $18.4 million requested?

Dr. GOLD. With the $18.4 million, it will be somewhat less than ———.

[CLERK'S NOTE.—Classified discussion removed.]

INDUSTRIAL BASE FOR QL

Mr. EDWARDS. The fiscal year 1983 budget also includes $10 million for establishment of an industrial base for QL. What is QL used for?

Dr. GOLD. QL is one of the binary chemical components of the Bigeye bomb. It mixes with sulfur to produce the nerve agent VX.

Mr. EDWARDS. According to GAO, the Army intended to place this facility at Pine Bluff Arsenal, but the Office of the Secretary of Defense directed that it be developed in private industry.

BEST DOCUMENT AVAILABLE

Why was this change made when the Army's own studies and a Programmatic Environmental Impact Statement concluded that Pine Bluff was the preferred alternative?

Dr. GOLD. It is my understanding the earlier studies found no outside source of QL. The motivation for the OSD directive was an attempt to save time and particularly dollars. The estimate was that since the only project we need QL for is the Bigeye bomb, it could be procured for significantly less money by going to an outside supplier rather than building a government facility and procuring it in-house. OSD initiatives created some industrial interest.

Mr. EDWARDS. Have you had some industry concerns about the required testing and development work and waste disposal problems and the need to guard QL?

Dr. GOLD. No. I don't think we have those concerns. We have had—there is certainly industry concern about getting involved with the weapons side of the chemical program. You know, there is really not a problem on a defensive side. Industry and even academia is willing to get involved with coming up with new antidotes, masks, or other protective measures.

There is a problem in getting particularly big industry, who have a worry about their corporate image, involved in some of the weapons activities. There is preparation going on now. The bids should be available on QL in August. We will know much better then just what our position is in terms of getting competent, qualified industry participation in the QL procurement process.

Mr. EDWARDS. GAO states that industry sources have expressed concern about required testing and development work, waste disposal problems and the need to guard against QL.

I am looking at this Fortune article.

Dr. GOLD. The Fortune article relates to the 155 mm. It refers to components needed to make the difluoro one of the chemicals. I believe the Army has a qualifed supplier for that now, although I will turn it over to General Fulwyler on that problem.

With regard to the QL problem (in the Bigeye bomb) again, we will know more in August.

INDUSTRY INTEREST IN CHEMICAL WEAPON PRODUCTION

Mr. EDWARDS. For the record, if I may say, the title of the article is "The Military Contract the Big Firms Shun."

General?

General FULWYLER. We still don't know, but we think so. We think we have qualified industries that are interested in it and will shortly be making the bid on it. Let me say a word about the lead-in of that article.

That is true. Certainly the chemical business and industry has shyed away from it. Why? Because it has been a very unstable program. The funding for it has been held hostage each year.

Mr. EDWARDS. It has been a tough program to get off the ground?

General FULWYLER. Yes, sir. I guess that is what I am trying to say. Industry is very much aware of that and not willing to get too deeply involved in it.

Mr. EDWARDS. I am not going to belabor this article, but there is a quote here on page 112, "None has ever made nerve gas before,

nor does any currently have a factory capable of making either of the two compounds for which the Army has advertised."

Is that your understanding?

General FULWYLER. No company today can make nerve agent, not even our own plants that are in layaway. As far as the precursors, there may have to be some tooling and work done there, but the manufacture of the difluoro or the QL is well within today's technology.

Mr. EDWARDS. Have your ever thought about contracting out to the Soviet Union for some of this?

General FULWYLER. It might make our life simpler, sir, if we did, We could also gain some intelligence data, perhaps.

Mr. EDWARDS. Do you find in talking with these folks that there is something of a fear perhaps that if they get into this kind of business that all of a sudden they are going to be hounded by pickets or the public in some way or the other who is not in favor of nerve type gases?

General FULWYLER. The first point that I think most concerns them is the fact that the money spigot may be turned off at any moment. That is in our funding.

Mr. EDWARDS. We are not a reliable entity on this subject, are we, sir?

General FULWYLER. That is correct, sir. There is somewhat of an uncertainty as to funding from year to year on this program. Certainly there is rising concern in certain parts of the country over chemical warfare. So that certainly has to play a part as far as the public affairs aspects of the companies.

HATFIELD AMENDMENT ON CHEMICAL WEAPONS

Dr. GOLD. There is certainly an element of the second. I will get back to the Hatfield amendment. This amendment, or something similar, which on the Senate side was approved unanimously provides the basis for a consensus in this area. It recognizes that procuring new chemical munitions is a tough decision. We do not like chemical weapons or chemical warfare, but we must do something to deter its uses. We do not want it to be a divisive issue. We do not want the votes to be 51 to 49, as they have in the Senate with bitterness, perhaps, on both sides.

The country has enough divisive issues. I believe if we can get agreement that this is something that has to be done and will be done in the most restrained and prudent way possible, then we can establish an environment in which we will see less reluctance on the part of the capable companies to give us the support we need particularly in the munitions part of the program.

General FULWYLER. I think the most encouraging thing in this area is that with the increased monies provided by Congress to us for research and development, we have seen a definite increase in interest by industry and by academia to do work in this area. This has not been the case in the past.

Dr. GOLD. On the defense side, no question.

Mr. EDWARDS. Is there any antidote for this binary nerve gas?

Dr. GOLD. There are antidotes that mitigate the effect of it. It depends how much a dose you have. We do not currently have what

we would call an effective antidote. There are gleams in people's eye, making use of advances in genetic engineering, in molecular biology, for example, an enzyme from squids (as you might have read about in the papers) may have the ability to detoxify certain nerve agents and genetic engineering approaches may be used to manufacture it in sufficient quantities.

There is hope, but it is not going to happen in this POM period, I can assure you, absolutely.

Mr. EDWARDS. Do you know whether the Soviets have antidotes for this type of nerve gas?

General FULWYLER. ———.

QL CHEMICAL PRODUCTION FACILITY

Mr. EDWARDS. What is the status of and the schedule for the so-called technology study to design the equipment needed to produce QL?

Dr. GOLD. I believe the technology study is the first step in the contract that we will be awarding to the industrial contractor. The first step will put together the initial design conceptualization. We are going to get responses to our bids in August.

General FULWYLER. The request for bids is due any moment.

Mr. EDWARDS. Have you got a schedule that breaks down the pieces of that? Would you put that in the record.

Dr. GOLD. Yes, we will.

[The information follows:]

The technology study will be a process verification study which will include the development of a design concept, a cost estimate to adapt the commercial facility to produce QL, an estimate of unit production cost, a pilot plant operation and demonstration of ability to produce QL to specification.

The schedule for this step one contract is: Solicitation (Request for Proposals), July 1982; Bids due, September 1982; Award Contract, November 1982; and Study Completed, May 1983.

Mr. EDWARDS. The $10 million cost estimate for this facility was provided to the Army by OSD based on cost data from one commercial chemical firm. The Army has stated that it lacks absolute confidence in this figure, and the facility cost may be higher.

How much higher might it be? When will we know?

General FULWYLER. We have no way of knowing much more than that until proposals are available.

Mr. EDWARDS. We know from history it will be higher?

General FULWYLER. I would say so.

Dr. GOLD. We are still hopeful that the total process will be lower than building the facility itself.

Again I will beg off until August when we get the results.

Mr. EDWARDS. Are you at liberty to say which firm it was?

General FULWYLER. We should not say that.

Mr. EDWARDS. Are they still interested in the project?

General FULWYLER. As far as I know, yes, they are.

Mr. EDWARDS. What will be the capacity of the facility?

Dr. GOLD. Basically our requirement is—I won't do the arithmetic for you—for ———.

General FULWYLER. We think somewhere around ——— bombs per month.

BEST DOCUMENT AVAILABLE

Mr. EDWARDS. What are the starting and completion dates for the facility?

Dr. GOLD. The completion date is sometime in ———. We are currently reviewing the program and trying to get a right balance between risk and prudence.

The starting date on that?

General FULWYLER. When we get the money.

Mr. EDWARDS. Oh. You are waiting on us?

General FULWYLER. Waiting on the budget.

Mr. EDWARDS. What is the status of design and engineering for this facility?

General FULWYLER. The Pine Bluff Facility Design is well along.

Mr. EDWARDS. Mr. Willson says well along is not enough for him.

General FULWYLER. It is in excess of 35 percent, which is usually the guide mark you use for obligation. I don't know the exact status. I know they are working on proceeding with the design. I asked this morning. They said we would be ready to start construction almost immediately once we got the approval and funds.

PRODUCTION OF BIGEYE BOMBS

Mr. EDWARDS. You have pointed to our inability to deliver current chemical munitions to rear echelons without exposing aircraft to enemy air defenses. How will the Bigeye bomb or any other element of our modernization program change all this?

Dr. GOLD. Let me say a word. I will then turn it over to General Tietge.

It will certainly not reduce the need to face air defenses. The point is, the bomb is much preferable to the existing spray tanks. It doesn't completely solve the problem, but it is a huge step forward over the current way we have to deliver them.

Jerry? This is really vital. Again, we keep pointing out ———.

General TIETGE. Mr. Congressman, as to our current capability, we only have two weapons. One is the MC–1 bomb which is nonpersistent. It drops like any iron bomb ———.

Mr. EDWARDS. Please answer the following questions for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Edwards and the answers thereto follow:]

Question. The fiscal year 1983 budget also includes $26 million in Other Procurement, Navy, for Bigeye. According to the budget backup information, $18 million of this is for production of 450 bombs while $8 million is for production tooling. Is this allocation correct?

Answer. The funds are broken down as follows: $15.8 million for production of 400 bombs; $9.5 million for production tooling; and $376,000 for engineering support.

Question. Where will the production tooling be installed, and when will the installation be complete and the facilities proven-out?

Answer. Production tooling will be installed in Van Nuys, California, at the Marquardt facility. It will be complete and proven-out in early fiscal year 84.

Question. Why are you requesting funds for production tooling, and end-item production in the same year?

Answer. The Marquardt Company will have a limited production capability based on the current contract. Our plans include utilization of this limited production capacity while provisioning for an expanded production facility.

Question. Why is the Air Force not requesting production funding for Bigeye until fiscal year 1984?

Answer. The Bigeye bomb, being developed by the Navy, will be in its final stages of development and testing by 1984. This will permit initiation of procurement of bomb bodies in fiscal year 1984 and allows for the lead time required for specific hardware and materials. Subsequent delivery of these units will then coincide with the availability of the liquid chemical (QL) and the completion of the Army's Load, Assemble and Pack (LAP) facility at Pine Bluff Arsenal. Operational bombs will be available upon completion of the process at the LAP facility.

[CLERK'S NOTE.—End of questions submitted by Mr. Edwards.]

Mr. EDWARDS. Thank you, Mr. Chairman.

Mr. MURTHA. Mr. Robinson?

Mr. ROBINSON. I have no questions at this point, Mr. Chairman.

DEPLOYMENT OF BINARY CHEMICAL WEAPONS

Mr. MURTHA. Dr. Gold, last September we asked whether there were any problems with our NATO allies concerning deployment of chemical weapons.

Dr. Wade replied: "In the sense of deploying these weapons, we have not had substantive discussions with our allies over the past year."

He also stated, "As to the future deployment of a new binary capability, we are continuing to review our policy."

Have there been substantive discussions with our allies since Dr. Wade testified in September 1981?

Dr. GOLD. The allies have been kept informed of our program but no, there have not been substantive discussions in terms of consultation.

Mr. MURTHA. What has been the result of the review of policy concerning binary deployment, cited by Dr. Wade in September 1981?

Dr. GOLD. There was a high level review at the highest levels in State, DOD, and the NSC. The decision was, we would keep the allies totally informed, giving them the opportunity to comment, but not to bring this up at what is considered as a premature time in terms of opening discussions of eventual deployment.

We are not going to have these weapons in sufficient quantities for U.S. needs until ——— years from now. It is just not an item that anybody thought should be placed on an already very fragile, loaded allied menu.

Mr. MURTHA. One of the things I see, criticisms I hear from legislators who visit this country is we never tell them until the thing is over. This may not apply in this case.

Dr. GOLD. I don't think it applies in this case. They have had letters from General Haig. They have been kept fully informed of the

program, on every decision. Before the President went forward with the certification letter to Congress, the State Department informed our NATO allies that we were now requesting monies for procurement.

What we have not asked them to do is consult with us. We view this as a unilateral, U.S. decision at this time.

Mr. MURTHA. Remember the problem we had with the deployment of the enhanced radiation warheads—the so-called neutron bombs—the change in the decision, the public opinion, the outcry? Of course, you know the public opinion in Europe now with the nuclear problem. Shouldn't we have some discussion?

Let's say something leaks out, which happens occasionally from our government or other governments. Are we going to have a problem?

Dr. GOLD. I don't think so. I don't think there is anything to leak here. What we are doing is making a U.S. decision. All the planned procurement numbers I have given you today will buy munitions for use from U.S. forces. This will provide a credible stockpile, even if stored in the U.S.

Eventually the allies will have to face some tough choices, but that is several years down the line. There is nothing to leak on this.

We have been very up front with them.

Mr. MURTHA. You don't see any problem with not having substantive discussions with the allies?

Dr. GOLD. At this time. That is not to say we won't have problems eventually. It depends upon the outcomes of events that we cannot predict.

Hopefully these will move toward more positive resolution. If they don't, think the chemical issue will be a relatively minor part of the problem we'll face in three or four years unless we get the alliance in better shape.

Mr. MURTHA. One of the two chemical compounds used in binary weapons will be procured, shipped and stored separately from the projectile itself, which will contain the other compound. Army testimony is that only shortly before firing would the second compound actually be inserted into the projectile.

Please describe this more fully.

Dr. GOLD. It would not be inserted until the President says. Presidential approval is needed for chemical use. Our view now is that we would not marry these components until Presidential approval is given.

General FULWYLER. Let me address that, Mr. Congressman.

Certainly we would never be in the process of loading the second cannister into the munition until we received release authority to do so, which would originate with the President.

The same as if we had been given by—that permission. What did we mean by that before? The munitions; the cannisters, the projectile, with one of the cannisters already in it would be located at what we refer to as ammunition supply points a few kilometers from the delivery units.

I would envision once that release comes that the people at the ammunition supply point would load the second cannister into the projectile which doesn't take very long.

Those loaded projectiles would probably be picked up by the firing battery and taken to their position some two or three kilometers ahead.

Again, as mentioned shortly before, I would see that occuring within a matter of an hour or two before the scheduled firing time if we knew that or as soon as possible.

That is not to say that that second cannister has to be put in at the ammunition supply point. We can do that within the firing site itself, if necessary.

It is a quite simple operation.

Dr. GOLD. General Tietge, you might want to address how the bomb would be handled.

General TIETGE. It is quite similar. They would be stored as two different components. Until you get the execution order to load, the two are not mated. Even after they are mated, they contain no lethal agent until activated on the aircraft. Of course, they have been through drop tests and still presented no threat at that time.

They have no more threat in their stored way than normal conventional munitions.

Mr. MURTHA. Let me see if I understand this. No matter what happens in the theater of operations, you talk about these being separated, but if you are under alert, who would give an order, to move it into proximity where you could couple the two separate sections?

General FULWYLER. I would envision if we have those in the theater, those weapons are going to be stored in the ammunition supply point.

Mr. MURTHA. Together?

General FULWYLER. Yes. Again, that is one of the benefits of the binary. For instance, some people say what happens if that ammunition supply point is struck by an air attack? Nothing, probably, because you don't have them combined. It is very unlikely that there will be any type of explosion which would bring the two together in the right way.

For instance, in order to rupture the disc inside the projectile it takes a setback of almost 3,000 Gs and certain temperatures and pressures to form GB so you are not going to get accidental mixing.

The retaliatory release and upload authority would probably come, as an example, from the Corps Commander or perhaps the Army Commander, in whose area this site is located.

He, in turn, has received the authority from, in this case, SACEUR—who in turn has received it from the President.

Mr. MURTHA. You are saying before you move it into proximity with the delivery system, you would have to have word; then you would get additional word?

General FULWYLER. That is the way I envision it. I don't think we would move it out of the storage area itself until we had been given an alert or a warning order.

Mr. MURTHA. Both of those come from the President?

General FULWYLER. The release comes from the President. What would happen at the theater level, the SACEUR level is preplanned. Once he made a request and reported to the President that the adversary had used chemicals against us, and that we should respond, at that time is when the President would have to

make the decision. I'm sure SACEUR would probably also issue a warning order down through the theater commands to get prepared.

Mr. MURTHA. So then from a theoretical standpoint or an actual standpoint now, the word to position these weapons would come from the theater commander as a warning order, but they would not be used by the actual system itself?

The delivery system would not attach them to the airplane or put them in——

General FULWYLER. The weapons will not be moved until the President approves release. The warning order would say be prepared. Get the stuff out. Unbox it, get the cannisters ready. Be ready to assemble. In sum, be prepared to execute when directed by the Commander-in-Chief.

Mr. MURTHA. What proximity are we talking about to the air basis or the actual artillery fire?

General FULWYLER. That varies. We are talking about a few kilometers to maybe 20 kilometers. It depends where the ammunition supply points are in relationship to the firing units.

Mr. MURTHA. I envision the Soviet Union, if they attack in Europe, it would be a very fast movement and you wouldn't have a lot of time. I see if you have it within a couple of kilometers, there would be no problem.

In the event of hostilities, what will you do? How much notice will be required to get the separately stored compound out of storage and issued to units in the field?

Dr. GOLD. The plan of action involving binary munitions in the event of hostilities will depend on the circumstances at that time. At this time, there are no plans for forward deployment of binary munitions. The time to move a day's supply of binary munitions by air from CONUS would range from one to six days, depending upon the warning time prior to movement. If munitions were already deployed in Europe, then the primary delay in issuing the binary munitions would be Presidential approval. The present stocks in Europe could be issued to units in the field within 24 hours if a decision to do so were made, and the binary rounds would have an equivalent response time. The fact that the binary round would consist of two components will not affect response time appreciably, since all artillery must also be matched up with fuzes and propellant, and the additional canister is only a small perturbation on the ammunition system.

Mr. MURTHA. Would a storage site for one of the binary weapon chemicals constitute a valuable target? Would its destruction negate our offensive chemical capability?

Dr. GOLD. There are no deployment plans and hence only hypothetical binary storage sites. Nevertheless, because we intend to have the minimum amount of binary retaliatory stockpile deemed necessary, in conjunction with our defensive capability, to deter chemical warfare, any storage site would become a valuable target for an enemy desiring to initiate chemical warfare. If an enemy did not plan on chemical warfare, then our binary storage site would be a much less valuable target. The destruction of any single storage site would not negate our retaliatory chemical capability, since dispersal of binary munitions would be safer, securer, and more

likely to be accomplished then in the case of unitary munitions; and in any case, CONUS stocks would still be used for retaliation. Again, however, the destruction of any part of a small capability would impact the total retaliatory capability, and therefore, any storage site would be a primary target for an enemy desiring to initiate chemical warfare.

Mr. MURTHA. That is all I have, Mr. Chairman.

Mr. CHAPPELL [presiding]. Mr. Robinson?

Mr. ROBINSON. I have no questions, Mr. Chairman.

CHEMICAL WEAPON DETECTIONS

Mr. CHAPPELL. I have a couple of questions. They have to do with detection and early warning. What kind of system could you envision that would enable you to detect the presence of gas?

Would you expect to have an early warning capability? Isn't that a difficult problem?

Dr. GOLD. It is very tough. Early warning, if you get 15 seconds, will be enormously important job with well-trained troops. So early warning is measured in terms of seconds.

Mr. CHAPPELL. You almost have to sustain a drop before you know it?

Dr. GOLD. The chemical agent takes time to disperse. You can do an enormous amount in a relatively short amount of time.

What we need is either area detectors that can look out over some area and detect that there is a cloud of chemical vapor or liquid being dispersed, or a network of point detectors that would, in essence, do the same thing.

We want to be able to cover a significant area and get the message to the bulk of our troops within a very short time.

Again, seconds are the difference between life and death in this regard.

Admiral COMPTON. I might elaborate on that.

The Navy intends to buy long range detectors this year. We have developed basically a ———.

I think we have some 16 units that we intend to buy this year.

Dr. GOLD. Almost as important as that, and again it is a deficiency in our current posture, is the ability to tell when the threat has ended. As you know, it is operating in protective gear which causes the significant performance decrement. We need to be able to tell much better when contamination levels go below a threshold. We can't do that very well at all in the field today.

Again, there are things on the drawingboard in R&D that will give us a much better capability of doing that. That is vital in terms of being able to maintain and sustain operations in a chemical environment.

General TIETGE. I might add today we have to assume every attack is chemical until proven otherwise. So they have to go in that gear. If you don't have—if you have a slow method of determining detection, that is how long it keeps you buttoned down before you can go back in normal operation.

DEMILITARIZATION OF CHEMICAL WEAPONS

Mr. CHAPPELL. The final area I want to ask you about is the demilitarization of the chemicals we now have. It has been estimated that it would cost us between two and four billion dollars to render them harmless.

What are the alternatives?

Dr. GOLD. Estimates have ranged——

Mr. CHAPPELL. First of all, we dumped a bunch of them at sea sometime back.

General FULWYLER. Yes, sir.

Mr. CHAPPELL. Is that an effective method?

General FULWYLER. As far as we know at this point, that was very effective. I read some reports on this. Divers went down and made an inspection. The ship was still intact. They were sealed in concrete. Evidently it was working.

Mr. CHAPPELL. We had information too if the container came apart, that in a matter of a few feet around the area, the salt water would completely dissolve it.

Dr. GOLD. That is the kind of solution where you not only have to be 99.99 percent sure, but even higher than that.

Mr. CHAPPELL. The public just won't accept that?

Dr. GOLD. I am not sure we could come up with sufficient proof to convince the public. If you come up with ten people who think it is right, you need an eleventh. Plus there is a public law against it.

Mr. CHAPPELL. I remember what happened in my district. My people got all up in arms. All kinds of rumors floated around. We had to reassure them time and time again of the safety factor involved.

Dr. GOLD. Let me address the other part of the question. Our objective is to dispose of the entire stockpile. You know, most of it is not useful today. If there is an arms control treaty we might want to get rid of it. We are sitting there with ——— agent tons of munitions, far more of metal parts and others we have to get rid of.

Mr. CHAPPELL. Where is it stored now?

Dr. GOLD. Most of it is stored in the United States. The largest part is at Tooele in Utah; some in Anniston, Alabama, some at Pine Bluff, Arkansas some in Lexington Blue Grass, Kentucky, in Umahlle, Oregon, there is a small amount in Germany and some at Johnston Island.

General FULWYLER. There are nine sites in the United States. We have a storage area in Germany and at Johnston Atoll in the Pacific.

Mr. CHAPPELL. How is it stored?

General FULWYLER. I just came back from Johnston Atoll looking at the stocks out there.

First of all, it is stored in igloos——

Mr. CHAPPELL. Ammunition dumps?

General FULWYLER. Ammunition igloos with a tight cover on them. I might add that the munitions stored in igloos are in good shape. Unfortunately, we also have a significant part stored in what is referred to as Pasco buildings. These are buildings above ground, metal type buildings. Of course, with the corrosive salt air, the buildings are coming apart, and what we need to do and are

trying to do is to build some additional igloos out there to provide better storage for them.

At the sites in the United States, the munitions are stored in igloos, underground or regular ammunition-type earth covered igloos.

It is adequate, good storage.

Dr. GOLD. Some of the shells are also stored in these Pasco-type buildings.

The environment at Tooele, Utah, is not nearly as severe as Johnston Island.

General FULWYLER. In those cases where there is a problem with munitions, they are isolated in separate containers.

Usually these containers are put in separate bunkers, segregated and kept apart. We have no problem with that.

You mentioned the alternatives on the demil. There are two basic processes that we are using, looking at now. One is a chemical neutralization process whereby we subject the nerve agent to chemicals, to neutralize them.

That works, however, for every pound of nerve agent that we neutralize, we gain about three pounds of salt and we can't certify that this salt is totally toxic-free.

Therefore, we have that problem. I have thousands of barrels of that.

The second process is thermal incineration, using high temperature. We have found this to be good. We have also recently found that this process will also do the job on nerve agent.

It is expensive, however, but these are the methods that we are investigating and the purpose of the money that is in the demil R&D and work is being done out at our CAMDS facility at Tooele.

Dr. GOLD. An overview of the program. Basically, we are going to proceed on demil that part of the stockpile that poses a potential safety problem. These are the rockets, a small part of the stockpile. These are deteriorating. The chemical agent is intimately tied in with explosives in the rocket; so our plan is to proceed as rapidly as possible in trying to demil these rockets.

With regard to the rest of the stockpile, we will learn from our R&D activities so we don't have to spend $4 billion on demilling; and I am sure we won't. At the very least, we should be able to develop more efficient processes to separate the munition and agent and then destroy the agent.

We hope to get payoffs from our R&D program which will allow us safely to get rid of the stockpile at a cost significantly less than $4 billion.

General FULWYLER. I think, Mr. Chappell, regardless of how much we can reduce it, it is going to be a very expensive proposition, any way you look at it.

The Army is kind of saddled with that problem. We have been and are the executive agent for the Department of Defense for chemicals.

I maintain that getting rid of that stockpile or demilitarizing any portion of it really is a part of the overall national hazardous problem. I don't think that it is right that the Army should be saddled with the bill for doing that.

It is just as much a national problem as is the disposal of our nuclear radiation wastes and must be resourced as such.

Mr. CHAPPELL. Once the chemical is mixed, there is no way to separate it again, right?

General FULWYLER. You mean on current munitions?

Mr. CHAPPELL. Yes.

General FULWYLER. No way to separate it.

Dr. GOLD. That is why the binary weapon is such an advantage. With the current ones, you not only have the agent but the things it comes in contact with, the metal parts, everything else.

General FULWYLER. That also includes the high explosives, bursters, and the igniters or fuzes.

Mr. CHAPPELL. How much is in the budget here for the research and development?

Dr. GOLD. There is about $12 milion in 1983 for research and development. The rest of the money for demil runs our CAMDS operation and also something called DATS, which is the portable system which the Army uses to render safe leaking munitions.

DATS is used to separate the chemical from the munition and the chemical is then stored to be eventually disposed of separately. It basically is a portable glove box operation that goes from depot to depot to keep on top of leakers that develop. It is a temporary expedient approach.

Mr. CHAPPELL. Do you think that is enough money in R&D to get to the heart of the problem?

General FULWYLER. It is probably about all we can effectively spend, sir, given the state of technology.

Dr. GOLD. Some people have claimed that there are really good ideas on how to do demil waiting to be discovered. We will try to find them.

General FULWYLER. I have been very encouraged because of the monies we had last year and what we have asked for this year.

We have had a number of companies coming to us and wanting to do research and work in that area. That is how we will solve the problem, by getting industry involved. If we have money enough to make it lucrative for them to pursue the problem, we can get work done on it. They can solve the problem, I am sure.

HATFIELD AMENDMENT ON CHEMICAL WEAPONS

Mr. CHAPPELL. As you know, Senator Hatfield amended the 1983 authorization bill to provide for every binary shell you produce, you destroy or demilitarize a unitary shell. What are your views on that?

Dr. GOLD. I worked with Senator Hatfield and Senator Warner in the wee hours of the morning on that. I think that bill——

Mr. CHAPPELL. You didn't propose that?

Dr. GOLD. No. I don't think it was necessary to propose it. However, it is consistent with our program.

Mr. CHAPPELL. It wouldn't give you any problems?

Dr. GOLD. The only aspect that may give us a problem, and we are working with the staffs, is an unduly strict interpretation on what is meant by servicable.

I have told you that we need and intend to procure about ——— artillery rounds.

Senator Hatfield, for the record, talked about the definition of serviceable, the number of ready for issue artillery rounds that we had in 1981. That is about ———. This interpretation would allow us to procure only a ——— artillery rounds. That is much too low to meet our needs, but I really foresee no major problem in coming out with an agreement. Currently we have over ———. We don't intend to build up to that number. We will be disposing more than what we build.

General FULWYLER. I have right now over 600,000—I guess it is about 700,000 different types of munitions I would like to destroy tomorrow if I could.

Dr. GOLD. The wording in that amendment says we shall "render militarily useless". That wording was picked so we would not be forced to accelerate a demilitarization program before it was economically ready.

We are working to come up with approaches that will satisfy us and the Senate on what is meant by "render militarily useless".

It might be something such as scoring artillery shells, i.e., putting a notch in it so that no artillery man would ever want to fire it. We are working to come up with a scheme that is hopefully very inexpensive and which will satisfy, most importantly, the spirit of this law: to show the U.S. is not starting an arms race; that we are not willy-nilly building up our stockpile.

In fact, we are changing from a larger to a smaller stockpile, to one we believe is more useful.

NAVY CHEMICAL WARFARE PROGRAM

Mr. CHAPPELL. Admiral, I suppose you are the one to ask about the Bigeye?

Admiral COMPTON. Yes, sir. That is our program.

Mr. CHAPPELL. What is the status of that program? Will it meet the ——— deployment?

Admiral COMPTON. Yes, sir. That program is on schedule as Dr. Gold said. There is considerable concurrency in the program, in the R&D portion with procurement or rather with the tooling that we are asking for this year.

We think it is a balanced, reasonable program to give us the needed capability as early as we can get it.

Mr. CHAPPELL. What about chemical warfare insofar as the Navy is concerned? What do you perceive to be the threat to the Navy?

Admiral COMPTON. Well, from what we know of the Russians' doctrine, their doctrine is to use chemical warfare. The systems that they have developed, both long range cruise missiles and a number of their guns, have both conventional capability and chemical capability.

In other words, they have the capability to use chemical warfare against us; they have the doctrine.

The Navy is concerned—we are concerned about being prepared to respond to the Russian threat. We do not think that the threat is as large for our ships, as compared to the Army's troops. In other words, there is asymmetry in it. But the threat is there and

the Navy is concerned about the threat. We feel we have to have a defensive capability. We feel we need some kind of retaliatory or deterrent capability. We feel we have to be prepared to support, for example, our Marines ashore.

We rank the threat and say ———, we feel that they are not threatened at all.

In other words, they are basically safe from the chemical threat.

Mr. MURTHA. How would they deliver it? A shell, a bomb on the ship?

Admiral COMPTON. We feel they would use one of their homing weapons, that has an ability to home and penetrate, that could release the agent into the interior of a ship. Our earlier thought was that they would dispense it with a bomb.

In other words, we felt we were less threatened because we could see the cloud or see the agent and maneuver.

We still feel that we are less vulnerable because of our maneuverability. But, when you have a homing weapon that is capable of carrying a chemical, it is a definite threat to us. I guess——

Mr. MURTHA. It doesn't seem logical though that they wouldn't have an explosive tip in a homing weapon. It just seems it would be more effective.

Admiral COMPTON. That is the reason we feel that the asymmetry for the Navy is not as uneven. In other words, if you can hit it with a chemical, you can hit it with a high explosive.

They don't have the payoff to go to a chemical weapon for the Navy that they do for troops.

They have a tremendous payoff with troops, but they would have the payoff to force us to go into protective clothing.

Mr. MURTHA. So the ——— would be the most vulnerable?

Admiral COMPTON. We feel that it would be the most vulnerable.

Dr. GOLD. ———.

Mr. MURTHA. Why ———? Wouldn't the same explosive be as effective?

Admiral COMPTON. No, sir. We feel ———?

Mr. CHAPPELL. Suppose you had a cruise missile that got through the outer defenses and it came within range of the Phalanx, when you shoot it down within that 2½ or 3 miles would it cause a problem, even though it didn't actually hit the ship?

Admiral COMPTON. That is a very tough one. I have seen, using the close-in weapons systems, the debris from the target, straddles the ———.

I would say it would depend a lot on the agent that was used. In other words, if it were the non-persistent, volatile agent, I think you would be safe. Not to say that you would have no casualties, but you are shooting this down basically ——— away from you. You are going to have some contamination.

If you had warning and set a gas type envelope, you have some protection; not complete protection, but some.

We feel we need a collective protection system or an over-pressure system in our ships which we are adding as a requirement. It would be a problem.

Mr. CHAPPELL. You would hope to catch them downwind, wouldn't you?

Admiral COMPTON. Yes.

Mr. CHAPELL. Let me ask the Air Force whether or not you budgeted for Bigeye?

General TIETGE. Yes, sir, we have.

Mr. CHAPPELL. How much have you budgeted in 1983?

General TIETGE. In 1983 for procurement? No, sir, not for procurement.

Mr. CHAPPELL. Why is that?

General TIETGE. This is an agreement between the Air Force and the Navy based upon the development left to do, the testing, and the first ones coming off would go to the Navy and we would start picking up ours in 1984.

PROTECTION OF EQUIPMENT

Mr. CHAPPELL. Coming back to the Army a minute, what about the tanks, the personnel carriers, and so forth? Are you doing any research in how to make those crews safe without the cumbersome gear?

General FULWYLER. Yes, sir. As directed by Congress four or five years ago, that we should examine, take necessary measures to provide protection for our personnel in those type vehicles.

Mr. CHAPPELL. The Soviets do that now, don't they?

General FULWYLER. Yes, sir, they do. We have under way a plan that we will commence retrofitting, as an example, the Abrams tank in 1985 with a total protection system that we call a hybrid system.

Right now they have the ventilated face mask, but the hybrid system will include that as well as putting overpressure in the tank to make it safe to operate in the chemical environment, even without a mask on.

Mr. CHAPPELL. Even if you broke the seal of the tank, you are going to contaminate anyway, aren't you?

General FULWYLER. Not necessarily. That is why you have an overpressure. The pressure in the tank is higher than the outside pressure. Depending on the magnitude of a leak, it forces it out rather than inward.

We are also examining similar type protection for our various armored personnel carriers, for our self-propelled artillery pieces.

At this time, we have identified some twelve items of equipment that we will provide hybrid collective protection systems for.

Mr. CHAPPELL. How about the airplanes for the Air Force and the Navy?

General TIETGE. Yes, sir. Future designs as they come up. That will be considered to be made part of the cockpit.

Of course, the problem you have is, you have to have some method when they leave the aircraft to protect them.

Admiral COMPTON. We are following the Air Force lead, particularly in the decontamination for the aircraft and the flight gear for the air crews that we have.

We are basically doing the same thing.

Dr. GOLD. Also on the ships as you pointed out. Starting in this POM period, we are starting to get protection on ships.

Mr. CHAPPELL. It would be easier on ships, I suppose, with the compartmentalization.

Admiral COMPTON. We want a positive over-pressure. That means you have to put a big filter on your supply ducts for ventilation. We are concerned about the backfit. It is going to be expensive to backfit.

Dr. GOLD. It will be relatively cheap if you start it from scratch.

Mr. MURTHA. What about delivery systems for the amphibious forces? For instance, how are you going to deliver the weapons?

Admiral COMPTON. The weapons to support the amphibious forces?

Mr. MURTHA. If you are going to use chemical——

Admiral COMPTON. We would use the Marines air with the Bigeye. Of course, right now, with our current weapons, the Navy has been very concerned with the safeness of the unitary weapons.

In other words, we are concerned that if we have an accident ———.

We would not have that concern with the binary weapon, but we would think in the amphibious operation that it would be supported both by the Navy battle group with their air and the Marine air.

Mr. MURTHA. You don't really have, though, the close air support guns today that you had, do you? You just don't have them at this point?

Admiral COMPTON. No.

Mr. MURTHA. So it would have to be air?

Admiral COMPTON. It would be air. That is what I mean about the carrier battle group, that it would have the Bigeye weapon, and the Marines, with their aviation, would have the Bigeye weapons. ———.

Mr. MURTHA. With their air wing?

Admiral COMPTON. With their air wing. ———.

Dr. GOLD. Again an enormous advantage of the binary storage on ships. ———.

The binary would allow that.

Mr. CHAPPELL. Suppose you had—carried on the ship both agents, both elements of the chemical, of the munitions. If you took a hit and you got a mixture, would that be a contamination?

Admiral COMPTON. We do not feel that would be a problem. You have to have the proper temperature and the pressure to have the reaction. For that reaction, you have to have the right circumstances. That environment is high pressure, high temperature, which we don't think you would get as a result of an explosion. We feel it would be——

Mr. CHAPPELL. You can almost throw them in the same room?

Admiral COMPTON. Yes, sir. We would plan they would be in two different areas.

Dr. GOLD. Prudence would dictate that.

General FULWYLER. But I would have no fear about storing them in the same place.

Dr. GOLD. These chemical components have to be mixed in intimate contact with each other.

Mr. CHAPPELL. Mr. Murtha.

CHEMICAL WARFARE DEFENSE CAPABILITIES

Mr. MURTHA. Dr. Gold, by far the largest portion of chemical warfare funding goes to protective and defensive purposes. Our chemical defense capability has been enhanced in recent years by procurement of protective clothing, including boots and gloves, detector kits, chemical agent alarms, protective masks, decontamination equipment, collective protection systems, and so forth.

Almost half of the total funding for defensive purposes is research and development. Why does R&D consume such a large protion?

Dr. GOLD. It is to re-establish the technology base. We are paying the price for not doing anything in this area for a long time. Because of the lack of R&D we do not have much developed equipment that is ready to go into procurements.

Mr. MURTHA. What are we talking about in terms of dollars?

Dr. GOLD. In 1983, it is about $236 million for R&D.

Mr. MURTHA. How much to buy clothing?

Dr. GOLD. Approximately $275 to procure defensive equipment including clothing. The total for protection (R&D procurement maintenance) is $510 million.

Mr. MURTHA. What is the total cost of our chemical program?

Dr. GOLD. About $710 million in 1983. It was somewhat more than $500 million this year. It will run about a billion dollars a year for the next several years.

CHEMICAL DEFENSE EQUIPMENT STATUS

Mr. MURTHA. What is our assest posture for the various types of chemical defensive equipment, and which items are in shortest supply?

Dr. GOLD. If it is acceptable to you, I would submit a detailed accounting for the record.

In general, as I said, in protective clothing, it is fairly good. There is enough equipment out there. In most other categories, it is not very good now.

[The information follows:]

The overall individual protective equipment status provides for initial survivial, but sustaining stocks are not yet acquired. The Army has the number of protective masks required for sustained operation, although 46 percent are over 15 years old and without capability for drinking. The Navy has protective masks for its fighting force, but all are old and without drinking capability. The Air Force has protective masks for its deployed and deployable forces, but the aircrew masks degrade capabilities significantly and improved ground crew masks are desired.

All Services have initial issue of protective ensemble (overgarment, overboots, gloves) for active deployed forces; but each service has some deficiencies in total quantity required to sustain operations. The total shortfall is approximately five million ensembles programmed to be acquired by fiscal year 1987 (plus replacements of those expended in training).

New individual decontamination kits are being acquired. Total remaining initial issue and war reserve requirements are approximately 9 million. Small unit chemical agent detector and identification kits are available for the active forces, but about 1.5 million are needed as war reserve to sustain operations.

Chemical agent detectors and alarms are in short supply, with the Army having about 60 percent of its minumum essential requirement of point vapor detectors, with the Air Force having about 50 percent, and the Navy just beginning to procure area detectors for its ships. No service has its required automatic liquid agent detectors which are just now finishing development.

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Collective protection shelters are a major and significant shortcoming for all Services. The Air Force has a critical shortage of collective protective facilities needed for rest and relief and key sortie generation work areas requiring a clean environment to operate. The Navy is the only major navy in NATO and the Warsaw Pact without collective protective citadels on its ships. The Army is short about 2,000 of its required collective protective shelters for forward medical treatment, as well as without a capability to operate inside combat and command and control vehicles without protecive masks and clothing.

Decontamination equipment and supplies are also not adequate for sustained operations. Although there is no shortage of the current portable power-driven decontamination appartus, there is a need for a greatly expanded and improved capability. Only the Navy with a water washdown system has a reasonably rapid decontamination capability, and it is not optimized for chemical warfare use.

Medical supplies are available for forward deployed forces, but there is a shortfall in CONUS industrial base for sustaining the supply of these items which have a relatively short shelf life.

Unfortunately, money is not the only resource required for eliminating these shortfalls. Many of the shortfalls in equipment cannot be reduced more rapidly than programmed because of the size of the production base. There are also many shortfalls because the equipment has not yet been developed. This is indicated by the relatively high R&D to procurement ratio of funds in the budget request.

General FULWYLER. What we have done, Mr. Murtha, for our deployed forces, we have assured that they have all been issued—and they have been as of now—all the defensive equipment that they need. That includes for our forces in Europe, as an example, one set of training clothing and two sets for readiness. What we would call war reserve. They have been provided all the necessary equipment to do that.

Mr. MURTHA. Is our gear better than the Russian gear?

General FULWYLER. I would say ours is probably a little bit better than the Russians. That is not to say much. The Russians primarily use butyl rubber. That is obviously going to have a greater heat stress load, greater distress than ours, but frankly ours is also unsatisfactory, in my judgment.

Dr. GOLD. The Russians have invested massively in decontamination equipment.

Mr. MURTHA. They know well if you cover a person up with material of this type, the pores aren't going to be able to breath. It will be hotter than the devil.

General FULWYLER. That is why it is absolutely essential that we have a credible retaliatory capability to hold the Russians at risk the same that he holds us at. Because if he forces us into protective clothing, we have to do the same to him. If we do, there will be no advantage for him to go chemical.

Mr. MURTHA. What are the NATO people doing? They sure must see that there is a problem. What are they doing? Do they have a chemical defense capability?

Dr. GOLD. Defensive capability varies from country to country. Some of the countries ———.

Again, the countries are in various states of living up to the agreement.

Mr. MURTHA. What about retaliatory weapons?

Dr. GOLD. NATO policy is to maintain a retaliatory capability. The U.S. is the only NATO country with such a capability.

Mr. MURTHA. They don't have any capability, you are saying?

Dr. GOLD. They don't have any munitions. They have the capability to use those munitions. We are the only ones with munitions.

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Admiral COMPTON. I might add on the NATO capability, almost all of their ships, either have full or partial collective protection system, as far as defensive. They are very definitely concerned for their navies to have a defensive capability.

Mr. MURTHA. Thank you, Mr. Chairman.

Mr. ROBINSON. No questions, Mr. Chairman.

Mr. CHAPPELL. Those questions the staff feels necessary to get into the record that we have not asked, we will place them in the record for your response.

[CLERK'S NOTE.—Questions submitted by Mr. Chappell and the answers thereto follow:]

BIGEYE PRODUCTION FACILITIES

Question. What other production facilities, if any, are required for full rate production of Bigeye for the Navy and the Air Force, and when will they be funded?

Answer. In addition to metal parts facilities at the Marquardt Company, the fiscal year 1983 budget includes funds to construct a Bigeye load, assemble, and pack facility at Pine Bluff, AR, and to create a commercial source for QL, one of the binary chemicals. In fiscal year 1984, funds will be required to equip the load, assemble, and pack facility and to create a second source for metal parts.

CHEMICAL WARFARE DEFENSE EQUIPMENT

Question. For each piece of chemical warfare defensive equipment currently in development, show the estimated date for type classification, the item it will replace, the improvements over the current system, the total development costs to date, and the expected additional funding to completion.

Army answer. The attached tabular data is compiled for defensive chemical equipment, which, in fiscal year 1983, is entering Advanced Develoment (AD–6.3) or is already in AD or Engineering Development (ED–6.4). The data does not include smoke related items, retaliating chemical warfare items, items which completed ED in fiscal year 1982, or defensive items planned to start AD in fiscal year 1984 or beyond. Consequently, this data does not comprise the total Chemical-Biological (CB) defense program requirement. Data has been prepared in tabular format for convenience. Items are grouped by similar mission requirement, not by dollars, dates, or priority.

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CHEMICAL/BIOLOGICAL DEFENSE EQUIPMENT CURRENTLY IN AD/ED (FY 83)

DEFENSIVE ONLY Chemical Warfare Equipment Currently in Development	Estimated Date For TC	Item It Will Replace	Improvements Over The Current Systems	Total Development Costs to Date ($M)	Expected Additional Funds To Complete ($M)
Hybrid Collective Protective Equipment (HCPE)	See "Improvements"	None- New Item	This equipment will provide both positive pressure and ventilated face piece collective protection to selected armored/ combat vehicles. Item will be TC'd with vehicle.	21.579	7.200
Personal Equipment Decontamination System (PEDS)	4QFY88	None- New Item	This will be a new start in FY 83. It will provide a decontamination system for clothing and personal equipment.	N/A	5.958
Interior Surface Decontamination System (XM15)	1QFY86	None- New Item		1.860	4.100
Light Weight Decon Sys (XM17)	To be Determined	None- New Item	An on-going International Materiel Evaluation Program funded by OSD is testing Norwegian Sanator to possibly satisfy requirement for light weight decon.	N/A	3.294
Jet Engine Decontamination System (XM16) (JEDS)	1QFY86	None- New Item		6.178	7.271
LC Scale Skid Mtd Decon (XM18)	1QFY86	M12A1 Decon Apparatus	Requirement originally for vehicle mounted system being developed under XM14 designation. Requirement changed in FY 82 and redesignated as XM18.	3.100	3.860
Multi-Purpose Decontaminate	4QFY87	DS-2 decontaminate	New Start in FY 83;Non-caustic	N/A	5.800
Automatic Liquid Agent Detector (ALAD) (XM 85 & XM 86)	1QFY87	None- New Item	This item will provide remote detection of toxic "rain" and will augment current M8 & M9 papers.	5.932	16.634

DEFENSIVE ONLY

Chemical Warfare Equipment Currently in Development	Estimated Date For TC	Item It Will Replace	Improvements Over The Current Systems	Total Development Costs To Date ($M)	Expected Additional Funds To Complete ($M)
Advanced Chemical Agent Detector Alarm (ACADA) (XM22)	4QFY86	M8 and M8A1 Alarms	Item is on accelerated schedule TC limited production in 4Q86 with follow-on maturation phase and release for full scale production in 4Q88.	1.940	35.935
Remote Sensing Chemical Agent Alarm(SCIREACH) (XM21)	4QFY85	None- New Item	Item is on accelerated schedule for TC-LP in 4Q85 with follow-on maturation phase and release for full scale production in 4Q86.	20.387	29.624
Detector Kit for Chemical Agents in Water (XM272)	1QFY83	AN-M2 Water Test and Screening Kit	Simple go-no go test. Current equipment not sufficiently reliable for detection of nerve agents and mustard. Also has no test for blood agents (cyanide)	2.633	0.200
NBC Reconnaissance Vehicle III	4QFY90	None- New Item	New start in FY 83. Will be used in support of armor and infantry units.	N/A	50.800
Simplified Collective Protection System (XM20)	4QFY83	None- New Item	Provides equipment that will convert an interior room into a positive pressure CB collective shelter	4.172	0.900
Biological Detector and Sampling Device (XM19/XM2)	1QFY83	None- New Item	Automatically detects biological agent aerosols by a chemiluminescent reaction. Does not detect toxins.	34.769	0.395
Modular Collective Protection Equipment (MCPE)	See "Improvements"	None- New Item	This is a continuing project to provide collective protection equipment to vehicle, vans, and shelters currently in the field and under development. There are currently 59 Army systems requiring this equipment. MCPE is Tc'd with parent system.	9.800	41.149

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DEFENSIVE ONLY

Chemical Warfare Equipment Currently in Development	Estimated Date For TC	Item It Will Replace	Improvements Over The Current Systems	Total Development Costs to Date ($M)	Expected Additional Funds to Complete ($M)
New Protective Mask	4QFY84	M17, M17A1, M25, M9, MX5, NBC Masks	Greater protection, better usability, more comfortable, better coupling with weapon systems.	40.300	26.611
Training Simulator for M256 Cml Agt Detector Kit	1QFY83	None- New Item	Item will provide realistic training in the use of the M256 chemical agent detector kit.	0.410	0.100
Chemical Alarm Simulator	2QFY83	None- New Item	Item will provide effective training capability for the M8 & M8A1 chemical agent alarms.	1.725	0.200
Collective Protection of Armored Vehicles	See "Improvements"	None- New Item	This project funds the application of HCPE to designated armored vehicles. Vehicles include ROLAND, DIVADS, MLRS, AFARV and FAAR. Equipment TC's with vehicle.	16.549	10.777
Individual Decontamination Kit	2QFY85	M258 Decon Kit	Will provide a decon kit for the soldier which is small, lightweight & inexpensive, using either pre-wetted towelettes or powder impregnated metals. Kit will have a repetitive use capability.	N/A	1.800
Universal Decontaminate	4QFY84	DS-2 STB Decon Solutions	Ongoing International Materiel Evaluation of German C-8 solution. Project will fund support of this system.	N/A	1.259
Modified M5 Riot Control Agent Dispenser for Thickened Liquid Agent Simulant	2QFY83	None- New Item		0.430	0.100
Vapor Sampler Training Aid	4QFY84	None- New Item	FY 83 New Start	N/A	0.298

DEFENSIVE ONLY

Chemical Warfare Equipment Currently in Development	Estimated Date For TC	Item It Will Replace	Improvements Over The Current Systems	Total Development Costs To Date ($M)	Expected Additional Funds To Complete ($M)
Contamination Monitor Training Aid	4QFY84	None- New Item	FY 83 New Start	N/A	0.460
Modified M58A1 Decontamination Training Aid	1QFY85	None- New Item	FY 83 New Start	N/A	0.300
Simulator, Projectile, Airburst, Liquid	2QFY83	None- New Item	Training Airburst Device designed to simulate an artillery chemical attack	1.367	0.040

DATE PREPARED: 4 August 1982

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Navy answer. The following information summarizes the Navy's chemical warfare defensive equipment development.

U. S. NAVY CHEMICAL WARFARE DEFENSE LIFE SUPPORT EQUIPMENT

CHEMICAL WARFARE DEFENSE DEVELOPMENT ITEMS	ESTIMATED DATE TYPE CLASSIFICATION BY APPROVAL FOR SERVICE USE (ASU)	INSERVICE ITEM REPLACED	IMPROVEMENTS OVER CURRENT CHEMICAL WARFARE SYSTEM	TOTAL DEVELOPMENT FUNDING COST TO DATE ($K)	EXPECTED ADDITIONAL FUNDS REQUIRED TO COMPLETE TOTALS ($K)
IMPROVED CBR CLOTHING	JUL 82	OUTMODED CW GEAR	IMPROVED CW SUIT	200	
LONG RANGE CW DETECTOR (CWDO)	JUN 83	-	NEW CAPABILITY	4,780	
REINSTITUTE DECONTAMINANTS	JUL 82	-	REINSTITUTE CALCIUM HYPOCHLORIDE	30	
MASK/BOOT/GLOVE PRODUCT IMPROVEMENT	AUG 83	HAIR GEAR	IMPROVED MK 5 GAS MASK, NEW BOOTS & GLOVES	740	
CW POINT DETECTOR (CAPOD)	SEP 83	-	NEW CAPABILITY	770	
MODULAR/PORTABLE COLLECTIVE PROTECTION - SYSTEM (CPS) ASHORE	JAN 83	-	NEW CAPABILITY	150	
LHA CPS - TWO ZONE PROTOTYPE - FULL SHIP	MAY 83 1985	FANS AND VENTILATION DUCTING	IMPROVED AIR MANAGEMENT, FILTRATION, AND REGENERATION	2,580	
IMPROVED WATER WASHDOWN/GROSS DECON	AUG 83	NOZZLES AND PIPING	IMPROVED SURFACE IMPINGEMENT AND COVERAGE	650	
PORTABLE CPS AFLOAT	1984	-	NEW CAPABILITY	-	
AUTOMATIC DECON HOSE UNIT	1984	-	NEW CAPABILITY	-	
SURFACE CONTAMINATION MONITOR	1984	-	NEW CAPABILITY	-	
AIR CREW PROTECTIVE ENSEMBLE	1984	-	NEW CAPABILITY	-	
IMPROVED MASK	1985	MK 5 GAS MASK	DRINKING TUBE, CANISTER, AND VOICE AMPLIFICATION	-	
360° DETECTOR, STAND ALONE	1985	-	NEW CAPABILITY	2,270	
MODULAR SHIPBOARD CPS	1986	-	FOR USE ON ANY CLASS OF SHIPS	110	
SECOND GENERATION CBR SUIT	1986	-	IMPROVED CAPABILITY	-	
INFRARED SEARCH AND TRACK (IRST) AUTOMATIC DETECTOR	1987	-	NEW CAPABILITY	-	

FY 83	8,400
FY 84	8,400
FY 85	7,700
FY 86	7,100
FY 87	7,300

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Air Force answer. Following are the major items of chemical warfare defensive equipment under development by the Air Force, scheduled production decision date, attributes of the system, development cost through fiscal year 1982 and estimated cost to complete development.

Detection and warning

Surface Contamination Monitor: Fiscal year April 1983; A portable, handheld device used to automatically detect, warn, identify and quantify vapor nerve and blister chemical agents on surfaces and in the air; Replaces manual, time consuming, wet chemistry detection kits; $4.2M; $1.5M.

Automatic Liquid Agent Detector: March 1983; Detects and alarms to falling liquid blister and nerve chemical agents; New capability; currently no capability to detect falling liquid chemical agents; $0.9M; 0.

Area Detection System: Fiscal year January 1986; A scanning detection and alarm system for liquid, vapor or gel form chemical agents located at fixed installations that will provide some advance warning time for personnel to seek protective equipment or shelter; New capability; $3.7M; $15.2M.

Individual protection

Integrated Chemical Defense System: Fiscal year January 1985; Lightweight aircrew helmet and oxygen mask that provides eye/respiratory protection and utilizes a positive pressure oxygen regulator that reduces crew member fatigue. Reduced weight, better visibility and improved comfort will enhance aircrew performance; Replaces HGU-39/P helmet, MBU-13/P Chemical Biological Oxygen Mask and Hood; $2.8M; $6.0M.

Chemical Defense Fabric Development: Fiscal year April 1984; Chemical agent protective clothing for aircrew and ground crew personnel that is lightweight, non-flammable, durable, breathable, supple, launderable and regenerable; Replaces the UK undercoveralls for aircrews and the two-piece overgarment for ground crews; $1.8M; $0.9M.

Collective protection

Shelter Development: Fiscal year 1986; Provide a family of collective protection shelters consisting of modification kits for existing buildings/structures and mobile tactical units, and stand alone shelters. Includes filtration/pressurization systems, ingress/egress air locks and decontamination/storage areas; New capability; $0.2M; $25.6M.

French Prefabricated Shelter (AMF-80): TBD; Reinforced concrete, buried shelter that provides chemical agent and conventional ballistic protection while providing a rest/relief or living area; New capability; $0.8M; $29.0M.

Decontamination

Sacrificial Coating; Fiscal year April 1983; Preattack strippable polymer coating that is easy to apply, will decrease the touch and vapor hazards of chemical agents and is easy to remove with strong detergent and water; New capability; $0.5M; $0.3M.

Freon Decontamination Unit; TBD; Commercially available Freon-113 dry cleaning system used in the nuclear industry that appears to be capable of decontaminating clothing and equipment; New capability; 0; $2.1M.

Poison Gas in World War II

Question. It is generally believed that Germany refrained from using chemical weapons in World War II because it feared retaliation by the Allies. This belief is cited as a reason for building a retaliatory capability against the Soviets. Recent opinion in the press disputes the efficacy of this World War II deterrent. The argument is that although the Nazis used poison gas on millions of concentration camp victims, the Allies refrained from gassing the German POW's in their hands in retaliation, and therefore, the threat of retaliation was a hollow one which the Nazis ignored.

How do you respond?

Does this argument undermine the Department's case for a buildup in chemical warfare capability?

Answer. The intent of our program is to deter chemical warfare. Chemical warfare was not conducted in World War II against our troops, and although there may have been many factors that created that result, at least one major factor was the German belief that we stood ready to retaliate against enemy forces if chemical warfare were initiated. The murder of prisoners is not part of warfare, and we would not ever plan on killing POW's no matter what provocation; and at no time, to our knowledge, was there any threat during WWII to so retaliate for any reason whatsoever. The mass murder by the Nazis of concentration camp victims was not known until after the war, at which time the murders were dealt with as being outside the accepted practices of war.

The argument concerning POW's and concentration camp victims does not deal with warfare, but with murder, and does not have any relevance to discussion of chemical warfare deterrence.

M-51 Protective Shelter

Question. The M51 Protective Shelter is an inflatable self-supporting system which provides pressurized, purified, temperature controlled air in an NBC environment for up to 10 personnel. Earlier this year, the Committee was informed that European commands refused to accept the M51 because it required additional personnel and transportation equipment which the European forces do not have. Changes to the Basis of Issue Plan and personnel requirements were being considered.

Why were these shelters procured before the transportation and personnel requirement were known?

Answer. The Army made a conscious decision to type classify the M51 Shelter without providing dedicated prime mover or additional personnel to support the M51 fielding. The decision was based on operational test results which showed that a vehicle of the using unit was not required to operate the shelter and that 4-5 personnel could erect/strike the shelter in 20-30 minutes. It was not until after the initial fielding of the shelter that the prime mover and maintenance personnel problems were surfaced. Subsequently, re-

quired vehicles and personnel have been authorized to appropriate units.

Question. How many shelters have been funded to date, and how many have been delivered?

Answer. Through fiscal year 1982 1328 units have been funded. A quantity of 1015 have been delivered. The remaining 114 are not on contract; however, contract award is scheduled for the 4th Quarter fiscal year 1982.

Question. How many shelters are deployed in active units as opposed to stored in a depot?

Answer. A total of 517 systems have been issued to units, including 17 for National Guard units. There are 498 shelters in depot storage. Our distribution plan for the shelters is as follows: 405 units in fiscal year 1982, 324 M51 units in fiscal year 1983 and 298 systems in fiscal year 1984. DA has directed MACOMs to requisition the maximum quantities of M51s which can be supported until the additional prime movers and maintenance personnel are provided.

Question. The M51 Shelter is to be used only by the Medical Corps. Why are we also buying other Standard Shelter for field medical equipment?

Answer. The M51 Shelter was developed to provide a limited capacity—10 man—shelter for use by forward medical elements to provide medical treatment in a chemical environment. The standard shelters were designed to support the overall medical requirements. Specifically, DoD adopted rigid wall tactical (ISO) shelters and fabric wall Tents, Extendable, Modular, Personnel (TEMPER) to provide a superior medical environment in Combat Zone Hospitals such as the Mobile Army Surgical Hospital (MASH), Combat Support Hospital (CSH) and Evacuation Hospital (EVAC). The M51 Shelter is not authorized for use by these Combat Zone Hospitals since it does not afford suitable hospital type patient treatment capabilities.

Question. How long does it take to set up the two M51 Shelters for a typical Battalion Aid Station, and how many personnel are required?

Answer. Set up time is a function of training of the crew and the terrain on which M51 Shelter is employed. A well trained crew of 4–5 individuals can erect one M51 Shelter in approximately 20–30 minutes. This was confirmed during a recent Force Development, Test and Experimentation conducted by the Academy of Health Sciences.

Question. What kind of generator or other equipment are required to maintain the M51 once it is erected and to keep it inflated? Does it have the same power pack problems as MUST?

Answer. A 3-phase 60 Hz 7.25 Kva Generator is a component of the M51 system. Other components include a gas particulate filter unit, military standard 20 HP gasoline engine, and environmental control unit. No significant problems with the power pack for the M51 Shelter have been experienced.

Question. What is the current schedule for issuing the M51 to active units?

Answer. The approved distribution plan for the M51 Shelter to active duty units is as follows: 405 M51s in fiscal year 1982, 124

units in fiscal year 1983, and 98 in fiscal year 1984. The other M51s would be issued to POMCUS forces and War Reserves. Further, until required prime movers and personnel are on hand in the units, the MACOMs have been directed to requisition the maximum quantities of M51s which can be supported with current resources. This approach will insure that the shelters are available for immediate use if required.

Question. A total of $46.5 million has been provided through fiscal year 1982 for procurement of the M-51 and $5.8 million for R&D. No additional procurement is budgeted in fiscal year 1983. Do you intend to buy more M-51's in future years? If so, how many, and at what cost.

Answer. The Army plans to purchase M-51 Shelters in fiscal year 1985—60 units at $2.1 million, fiscal year 1986—80 units at $2.7 million, and fiscal year 1988—240 units at $15.8M.

QUESTION. How much of prior year appropriations is unobligated, and what is the current obligation plan?

Answer. There are no unobligated funds prior to fiscal year 1982. $9.9M was appropriated in fiscal year 1982 for procurement of 217 shelters. $4.7M was reprogrammed to cover higher priority requirements. $5.2M is unobligated; however, the Army plans to award a contract in the 4th Quarter fiscal year 1982 for 114 shelters.

QUESTION. What other Services, besides the Army, have brought or intend to buy the M-51?

Answer. No other Services have procured the M51 and the Army is unaware of any plans of the Other Services to procure the M-51 in the future.

XM-30 PROTECTIVE MASK

QUESTION. The fiscal year 1983 budget includes $49.4 million for the Army, and $1.4 million for the Air Force for the first procurement of XM-30 series chemical protective masks. In a recent article in Defense Week, these masks were described as less effective, and far less reliable than the standard issue masks which have been in the inventory for many years. Based in part on this article, Senator Proxmire gave the XM-30 mask the "Golden Fleece" award for May, 1982. Subsequently, the Army announced that both the Development and Readiness Command (DARCOM) and the Training and Doctrine Command (TRADOC) have recommended that the XM-30 mask not be fielded. What did the Army decide as a result of the In Process Review (IPR) of the XM-30 program last January?

Answer. The Army decided to (1) terminate the XM-30 Series Mask Program for the Army, (2) review the operational requirements, and (3) re-structure the research and development program based on the review.

QUESTION. Does the Army still intend to procure XM-30 masks in fiscal year 1983?

Answer. No. However, we will have to continue procurement of the current mask. Therefore, the fiscal year 1983 funds are required.

QUESTION. Development work began on the XM-30 in 1974. How much has been spent on development to date?

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Answer. $45.5 million ($39.0M Research and Development (R&D) and $6.5M Manufacturing Methods Technology (MMT)).

QUESTION. What testing and evaluation has the Army done of alternative masks used by our NATO allies?

Answer. The Army routinely tests and evaluates NATO member nation masks through Memorandum of Understanding and other working panels, e.g. the United Kingdom, Germany, France and Norway. The tests and evaluations are concerned with toxic agent penetration, vision capability, inhalation resistance and peripheral seal. As NATO masks are tested and evaluated, any improvements noted are converted to U.S. use.

Question. What is the Army's current development and procurement strategy for chemical protective masks?

Answer. First, let me point out that the current protective mask provides adequate protection from known threat agents. The Army is currently reviewing the operational requirements and the urgency for a new eye and respiratory protection system. Based upon the results of that review, an appropriate research program will be structured for development of the required protective system. Until such time as a new system can be type classified, the Army will continue to procure the current standard masks.

DEMILITARIZATION PROGRAM—COSTS AND ALTERNATIVES

Question. In the course of the debate over chemical weapons production much attention has been placed on the size and condition of the current U.S. stockpile of weapons.

How large is our current stockpile of chemical weapons? How much of this is in bulk form, and how much is actually loaded into weapons?

Answer. The chemical retaliatory stockpile consists of approximately ——— agent tons. About two thirds, or ——— agent tons, is in bulk form for which no munition of filling lines are available. Thus, bulk agent is of no deterrent value. Further, over 41 percent of the bulk agent is pre-WWII vintage blister agent which has limited, if any, utility. The remaining agent in the stockpile is loaded in munitions. Only approximately ——— agent tons are ready for issue and ——— agent tons are in repairable munitions. ——— agent tons are in irrepairable or obsolete muintions which should be disposed of as soon as possible.

Question. Where is our current stockpile located, and how much is at each location?

Answer. Chemical munitions and bulk chemical agent are located at eight major storage sites within the United States and at two sites overseas; Johnston Island and Germany. The approximate quantities stored at these locations are show here:

LOCATION (QUANTITIES AT EACH LOCATION DELETED)

Tooele Army Depot
Anniston Army Depot
Lexington Blue Grass Depot Activity
Pine Bluff Arsenal
Umatilla Depot Activity
Pueblo Depot Activity
Newport Army Ammunition Plant
Edgewood Arsenal

Johnston Island
Europe

In addition, we have small quantities of agent stored at Dugway Proving Grounds for use in research and testing.

[CLERK'S NOTE: Classified quantities (agent ton) removed.]

Question. What chemical weapons are owned by our allies?

Answer. Although all of our allies have reserved the legal right to retaliate with chemical weapons if they are used against them, ——— a chemical retaliatory capability. Their stockpile quantities are not known.

Question. How many agent tons are considered ready for issue? How many agent tons are considered repairable? How many agent tons are considered irrepairable or obsolete?

Answer. At present, there are approximately ——— agent tons in ready for issue munitions, ——— agent tons in repairable munitions and ——— agent tons in irrepairable or obsolete munitions. In addition, ——— agent tons are in bulk which is not usable and the majority of the agent is obsolete mustard.

Question. How will the quantity of ready-for-issue, repairable and irrepairable/obsolete change by the year 1990?

Answer. Our current chemical munition maintenance plans emphasize the upgrading of 155mm, 8 inch and air-delivered nerve agent munitions. Except for normal surveillance for safety reasons, all other chemical munitions will not or can not be upgraded to a serviceable condition. Upon completion of our present maintenance plan in fiscal year 1985, the ready for issue quantity will be about ——— agent tons. I must add, however, that there are some unknowns which we can't predict. All of these usable/repairable unitary chemical munitions are old and have not been test fired since 1969. While are able to perform external maintenance, we cannot prevent the internal deterioration of the agent fill and munition body. Thus, we are approaching the time when considerable amounts of these munitions will become unserviceable, despite considerable maintenance, because of internal agent deterioration. Another factor, as we approach the 1990's, is obsolescence of delivery systems. The phase out of the 4.2 inch mortar, 105mm howitzer and aircraft spray tanks will substantially reduce the quantity of usable munitions. Based upon these factors, we estimate the amount of usable unitary chemical munitions that would be available in the year 1990 is approximately ——— agent tons. Further, this does not consider the Hatfield amendment to the Defense Authorization Act of 1983, which would require us to "render useless for military purposes" one serviceable unitary chemical artillery projectile for each binary munition produced. In summary, by 1990 our current stockpile will be reduced to a level which equates to unilateral disarmament, unless binary munition production is authorized as requested in the President's 1983 budget.

Question. How much is spent each year to take care of and maintain the current stockpile?

Answer. Historically, the Army has invested nearly $400M in maintenance of the retaliatory chemical stockpile. Since 1976, the Army has spent $276.3M for stockpile maintenance. The cost breakout is shown here:

Security	$108.7M
Surety	7.0M
Inventory	24.8M
Pre-warehousing	4.7M
Surveillance	22.8M
Special Equipment	7.9M
Training	2.6M
Leakers	2.1M
MCA: One time facility cost	41.7M
Site Upgrade	54.0M

In addition, we have over 4200 personnel dedicated to our surety program. The precise amount spent each year varies but averages over $40M each year. For example, the costs associated with the care and maintenance alone of the chemical stockpile during the past three fiscal year were $36.4M for fiscal year 1979, $53.3M for fiscal year 1980, and $44.2M for fiscal year 1981. When one considers that we are expending this level of resources to maintain munitions that can not be used—thus adds nothing to deterrence—and which present a serious hazard to the public and environment, it is imperative that we continue our efforts to demilitarize the unitary chemical stockpile at the earliest practical date.

Question. On March 2, Secretary Ambrose testified to this Committee: "I am not at all satisfied we have to spend that much money. Before embarking on anything like a $2 billion program, I have asked our research organizations to comb the industry and their own laboratories very thoroughly to see if there are not more efficient ways." What have been the results of this inquiry? Have any promising methods been found?

Answer. It was precisely the enormous costs ($2-4 billion) associated with current demilitarization procedures and processes—chemical neutralization and incineration—that caused us to start a pilot plant evaluation program in 1979 to identify faster and cheaper ways for disposing of the current stocks. In additon to the pilot plant, called CAMDS, which is located at Tooele, Utah, we started a special five-year RDTE program to define new technologies in agent destruction and hazardous material handling in order to reduce the large capital investment required by current technology as well as associated energy requirements. Using the $9.5M provided by the Congress in our fiscal year 1982 budget to start this program, we hope that this initiative will reduce the total disposal cost by as much as 40 percent. However, we must start now using the more costly technologies to dispose of the more hazardous munitions—BZ cluster generators, M55 rockets and M23 land mines. To do otherwise would result in a serious risk to the public and environment.

Question. What facility capacity currently exists to demilitarize chemical weapons?

Answer. We do not have an industrial sized facility today for chemical demilitarization. The Chemical Agent Munition Disposal System (CAMDS) located at Tooele Army Depot is a pilot facility. CAMDS which was designed to develop and demonstrate advanced technologies, procedures and equipment for large scale demilitarization. This pilot system is being tested in 12 phases scheduled through 1987. During this period approximately 130,000 munitions of various types will be demilitarized. Since operations were initiat-

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ed in 1979, a total of 7,942 155 mm GB projectiles, 7,107 105 mm GB projectiles and 13,951 M55 GB rockets have been demilitarized. Initial tests have proven the effectiveness of CAMDS but the facility does not yet reflect state-of-the-art technology, and requires high capital investment and energy consumption. Hopefully, our ongoing research and development program for demilitarization will provide better and cheaper approaches for large scale chemical munition demilitarization.

Question. What additional facilities are planned for the future and what funds are budgeted for this purpose in the current POM?

Answer. The number of demilitarization facilities required in the future is dependent upon our ability to transport chemical munitions and bulk chemical agents to regional demilitarization facilities. As a worst case, nine facilities will be required. The immediate need is to demilitarize the incapacitating agent BZ munitions at Pine Bluff Arsenal and the M55 GB and VX rockets and M23 VX mines. This requirement will necessitate the construction of five demilitarization facilities. The fiscal year 1983 budget contains $18.2M for engineering efforts on the design of a demilitarization facility at Johnston Atoll.

Question. How much of the chemical stockpile is being demilitarized each year and how long will it take to complete the process at the current rate?

Answer. As indicated earlier, we do not have the capability to initiate large scale demilitarization. The CAMDS facility is a prototype which was designed to develop and demonstrate advanced procedures for large scale demilitarization. Our goal is to combine what we learn during the operation of CAMDS with results from the ongoing demil R&D program to identify the most cost efficient, high capacity system for solving this national demilitarization problem. Since beginning operations in 1979, CAMDS has demilitarized 29,000 chemical munitions. Using CAMDS technology, we estimate it will take 10–15 years to complete disposal of the entire stockpile at a cost of $2.7B.

Question. What does it cost per year for demilitarization, and what is the estimated total cost? How much is in the fiscal year 1983 budget for this purpose?

Answer. Thus far, the Army has expended approximately $400M for demilitarization. The cost has fluctuated year to year since the program has been primarily one related to efforts to determine the most economical and effective way to demil, and the disposal of leaking munitions which presented immediate hazards. The total cost to demilitarize the entire unitary chemical munitions stockpile has been estimated to cost $2.7B. This cost estimate was based on the use of CAMDS technology as it presently exists. The Army is actively searching for a more efficient method for demilitarizing chemical munitions and hopefully total demilitarization costs will be revised downward. Nonetheless, the solution of the national demilitarization problem will be costly. The fiscal year 1983 budget request contains a total of $57.8M for demilitarization operations and $12.8M for demil RDTE or a total of $70.6M.

Question. How much is being spent in R&D to develop better ways of demilitarizing chemical weapons, and when might we expect to see some results of this effort?

Answer. Funding for chemical munition demilitarization research and development is $9.5M for fiscal year 1982, and a total of $31.1M in the fiscal years 1983-87 Five Year Defense Plan. Army contractors are now in the concept development and engineering/economic analysis phase. The demilitarization R&D program will include: concepts of thermal destruction of all three agents eliminating the chemical neutralization processes and the associated capital equipment costs; advanced thermal processing techniques for simultaneous agent/explosive demilitarization; evaluation of chemical modifications of the lethal agents as precursors for binary components, phosphate fertilizers or other useful industrial chemicals; novel disposal techniques, e.g. destruction by underground nuclear blasts; advanced mechanical process operations to reduce or eliminate complex maintenance, munitions processing, transport, or disassembly operations; and state-of-the-art improvements in personnel protection for increased safety, decreased costs, or both. Each area of investigation will utilize a progression from literature search, to laboratory, to pilot operation leading to full scale design criteria. Contractor proposals are due early in 1983. As a specific example of R&D results, Battelle Laboratories conducted studies involving incineration, munition desensitization (inerting), toxicology, detonability, decontamination and chemical neutralization which provided the necessary data to allow design of the BZ demilitarization facility scheduled for construction in 1984.

Hopefully, we will start to see positive results within a year or two. However, this like any RDTE program may not identify a better and cheaper way than that currently available within the state-of-the-art.

R. & D. for Chemical Warfare

Question. DOD is seeking rapidly increasing funds for R&D efforts associated with chemical warfare. These funds totaled $88 million in fiscal year 1981, were increased to $217 million for fiscal year 1982, and are requested at $281 million for fiscal year 1983. Last year, we asked how efficiently DOD could handle a sudden near-tripling of R&D in a single year. How much of the fiscal year 1982 funds have been expended, and how much obligated, to date? What measures have been taken to ensure that these funds are being used in the most cost-effective manner?

Answer. $137.8 million or about 65 percent of the fiscal year 1982 chemical program R&D funds have been obligated, and of that, $61.3 million has been expended in the first eight months of fiscal year 1982.

The new DOD focal point for chemical matters was formed this fiscal year, and Dr. Gold appointed in March, 1982. Although this new office has not played a significant role yet in the ongoing R&D management, it has provided the Services additional time to devote to ongoing program management by assisting in other responsibilities. The Army, which is the DOD executive agent for chemical R&D, has increased its level of management of chemical program by establishing a HQDA focal point office, headed by a Major General and by assigning Brigadier Generals to command the Chemical School and the Chemical Systems Laboratory, as well as con-

tinuing Vice Chief of Staff U.S. Army chaired in Process Reviews of the Chemical Program. Further, the Army has established a CW/NBC Defense Program General Officer Review Committee and designate an Army Science Board group to review/monitor the Army's CW/NWC defense RDTE program. The Air Force also has a General Officer's Council on Chemical Warfare to oversee the entire AF CW program, which includes reviewing program elements and providing direction to obtain the best payoffs for Air Force specific R&D effects. In addition, the Air Force R&D community developed an "alternate concept" to investigate "off-the-shelf" systems used by industry and allied nations for application to Air Force unique problems. The Navy uses its existing strong R&D management systems for Navy unique R&D problems.

Question. An additional 29 percent increase is requested for fiscal year 1983 over fiscal year 1982. Does not such an increase compound any problems of efficient and effective expenditures? Last year, the Department projected that $270 million would be needed in fiscal year 1983 for the Protective Measures part of chemical warfare R&D. $236 million is the actual request. Does this indicate that funds cannot be spent as efficiently as was formerly believed?

Answer. The increase in fiscal year 1983 R&D funds is much smaller in both dollars and percentage than the increase from fiscal year 1981 to fiscal year 1982. As the answer to the preceding question indicates, the measures taken to ensure that those funds are being used in a cost-effective manner are working. There is every reason to believe that the same will be true for fiscal year 1983, particularly because the fiscal year 1983 increase is concentrated in the area of medical R&D which can readily absorb the increase both efficiently and effectively. The difference between the projected R&D cost and the requested dollar lies primarily in a redefinition of what R&D is considered chemical as opposed to NBC, but there also was reduction in some areas due to the prioritization process. There was not any reduction due to concern that the funds could not be spent as efficiently as was formerly believed due to management problems.

Question. Funds are being spent for R&D of chemical warfare items which apparently are not reflected in the Department's listings. For example, the Army is requesting funds in its Combat Vehicle Improvement Program for protective systems for the Abrams Tank and the Bradley Fighting Vehicle. How much more do these kinds of efforts add to the total cost of R&D for chemical warfare?

Answer. Funds are being spent by individual program/project managers in attempting to meet the requirements imposed by chemical warfare defense. These funds are difficult to capture as they are part of the integrated development by the program/project manager. However, the estimated fiscal year 1983 R&D funds for chemical warfare protective systems for the Abrams Tank and the Bradley Fighting Vehicle are $16 million.

[CLERK'S NOTE.—End of questions submitted by Mr. Chappell.]

Mr. CHAPPELL. Thank you for a fine hearing.

Dr. GOLD. Thank you for your time and impressive list of questions.

Mr. CHAPPELL. The committee will adjourn until 10:00 tomorrow.

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THURSDAY, JULY 22, 1982.

B-1 COST ESTIMATES

WITNESSES

DONALD DAY, SENIOR ASSOCIATE DIRECTOR, GENERAL ACCOUNTING OFFICE

ROBERT MURPHY, EVALUATOR, GENERAL ACCOUNTING OFFICE

JAMES GABRIEL, EVALUATOR, GENERAL ACCOUNTING OFFICE

INTRODUCTION

Mr. ADDABBO. The committee will come to order.

This morning the committee will be briefed on the cost of the B-1B bomber by the General Accounting Office.

Ever since the Administration revived the B-1 bomber program, there has been controversy on the issue of how much the program will ultimately cost.

The ultimate cost of a fleet of B-1B bombers depends, of course, on a variety of factors such as future inflation rates; the decision as to what subsystems are ultimately included in the B-1; the adequacy of the industrial base; and what B-1 related costs are actually included by the DOD in its cost figures for this aircraft.

The Administration is committed to achieving the production of 100 B-1's at a total cost of $20.5 billion in fiscal year 1981 dollars.

The GAO has conducted a study in which it had access to the documentation which supported the conclusion in OSD's CAIG report on the B-1. The results of the GAO study estimated the cost of 100 B-1's to be $26.7 billion in fiscal year 1981 dollars.

In the briefing today we expect to cover various issues including:

What B-1 related costs are included and/or excluded in the Air Force's cost estimate?

What are the various cost estimates for the B-1B in current dollars and in then year dollars?

Which of the projected B-1 cost estimates does the GAO believe to be the most realistic?

The committee presently has a hearing on the B-1B and other Air Force strategic programs scheduled for July 28th.

Detailed questions on these programs will be covered at that time. Witnesses from the Office of the Secretary of Defense and the Air Force will be present at that hearing.

For today's briefing on the B-1, the committee welcomes: Mr. Donald Day, Senior Associate Director, General Accounting Office; Mr. Robert Murphy, Evaluator, General Accounting Office; and Mr. James Gabriel, Evaluator, General Accounting Office.

SUMMARY STATEMENT BY MR. DAY

Mr. DAY. We are pleased to be here today to discuss the cost estimates for the B-1B aircraft program.

As you know, the Air Force's program cost estimate was reviewed independently by a team from the Air Force and a team from the Office of the Secretary of Defense in late 1981. The independent reviewers also prepared estimates of their own but the Air Force and Department of Defense were reluctant to give us access to the details of those estimates, and not until May 1982 were we provided information and comparisons from the independent analyses.

Mr. Robert Murphy from our Cincinnati Regional Office will give a briefing on the details of the cost estimates in just a moment but first, I would like to emphasize two points.

One, these independent estimates are not new—the results were available to the Deputy Secretary of Defense before he issued a directive on November 4, 1981 concerning management of the B-1B program.

Second, despite the controversy surrounding the estimated cost of the B-1B, we think the Air Force and Office of the Secretary of Defense are making a concerted effort to acquire the B-1B program within its estimated cost baseline of $20.5 billion fiscal year 1981 dollars.

The independent estimating teams generally dealt with (1) the adequacy of the baseline estimate as proposed, (2) the exclusion of certain necessary program costs from the baseline, and (3) the cost associated with potential future growth in the program.

Both the Air Force and OSD independent teams surfaced concerns about the $20.5 billion baseline estimate, indicating that certain assumptions leading to that baseline estimate were optimistic.

Air Force officials responsible for managing the B-1B program believe their baseline estimate is justified by experience with the earlier B-1A program.

Our briefing compares the estimates and provides certain information about the cost issues.

An important concern to us has been the exclusion of certain program costs from the B-1B baseline. Those costs, such as acquisition of simulators, certain engineering programs for the engines, acquisition of equipment needed to provide the Air Force an in-house depot maintenance capability, and so forth, could add up to over $1.4 billion.

Mr. ADDABBO. Are those 1981 dollars?

Mr. DAY. Yes, sir.

We believe excluding these costs from the B-1B baseline provides poor visibility of the B-1B program acquisition cost as well as annual funding requests.

We believe OSD and Air Force guidance on establishing program baselines needs to be improved to provide uniformity in establishing baselines and reporting them to the Congress.

With these few introductory remarks, I would now like to turn the briefing over to Mr. Murphy.

Please feel free to ask questions as we go.

TIMING OF CAIG REPORT

Mr. ADDABBO. Before you turn it over to Mr. Murphy, one of these independent estimates listed on the first page is not new; results were available to the Deputy Secretary of Defense before he issued the directive on November 4th.

Are you telling the committee that at that point in time they had sufficient information that would have given them the figure of $26.7 rather than the $20.5 billion?

Mr. DAY. That is correct.

Mr. ADDABBO. Mr. Murphy?

Mr. MURPHY. Everybody should have a copy of the briefing. We will page through it. I will explain.

Any time you have questions, like Don said, just stop me and we will respond as best we can.

Chart 1 is an outline of the briefing.

[Chart 1]

BRIEFING OUTLINE

Background.
Overview of B-1B cost estimates.
Guidance for baseline cost estimates.
Summary comparison of estimates.
Discussion of SPO, Air Force independent, and OSD independent estimates.
Observations.

[Chart 2]

BACKGROUND

[All dollars are fiscal year 1981]

Fiscal year 1981 Defense Authorization Act—$300 million for research, development, test and evaluation:
"* * * vigorously pursue full-scale engineering development of a strategic multi-role bomber * * * to achieve an initial operational capability not later than 1987."
Joint OSD/Air Force bomber alternatives study:
AF recommendation—100 B-1 variants—$19.7 billion cost baseline.
1986 IOC.
Independent cost estimate—Air Force.
President's announcement—October 2, 1981.
100 B-1 variants—including ALCM and LF/VLF.
OSD report on B-1B cost.
Deputy Secretary of Defense memorandum—$20.5 billion baseline.
Presidential certification that $20.5 billion is feasible.

Chart 2 merely shows the chronology of the major events. The independent estimates we are discussing were done in September and October of 1981.

[Chart 3]

OVERVIEW OF B-1B COST ESTIMATES

[All dollars are fiscal year 1981]

B-1B SPO estimate:
$20.5 billion baseline.
Air Force independent estimate:
$21.01 billion baseline.
$1,453 billion identified as appropriate additions to SPO baseline.
About $1.1 billion in other protential costs if program scope is expanded.
OSD independent estimate:

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Risk analysis indicated SPO baseline cost may be exceeded by $4.74 billion (to $25.27 billion).
$1,433 billion identified as appropriate additions to SPO baseline.
$0.474 billion in potential costs if program scope is expanded.
More detailed comparison later.

Chart 3 is an overview of the estimates. Again these are all fiscal year 1981 dollars.

THEN YEAR DOLLAR PROJECTION OF $400 MILLION PER PLANE

Mr. ADDABBO. Mr. Murphy, we all know when the B-1 was canceled by the previous administration, the estimated cost at that time was $100 million per aircraft.

When the B-1B was revived, the estimated cost was $200 million per aircraft in constant 1981 dollars.

By a preliminary discussion here, it would seem closer to $270 million; again in constant 1981 dollars.

I understand that the CBO, the Congressional Budget Office, is doing an actual analysis to determine the costs in then year dollars. I am advised that CBO has concluded that the then years dollar costs will be about $400 million per aircraft.

Mr. MURPHY. We understand CBO has made that statement. If you will turn back to chart 7, you will see we have not attempted to escalate the cost in then year dollars.

The OSD estimate in itself was not made in escalated dollars. This is what CBO has attempted to do, is escalate that.

Since CBO has done it, we have not attempted to. However, using simple ratios, if you look at the first column, the program offices estimate in fiscal year 1981 dollars was $20.53 billion; escalated, that becomes $29.3 billion, roughly 42 percent higher.

Although this is not a very good technique for doing escalation, if you use that same kind of a ratio against the OSD independent estimate, you would come up with an estimate on the order of the high thirties in billions of dollars.

Mr. ADDABBO. Thank you.

WHAT'S INCLUDED IN THE BASELINE ESTIMATE

Mr. MURPHY. Chart 3, the SPO estimate is a $20.5 billion baseline. The Air Force independent estimating team came to a slightly higher figure in terms of the baseline itself. Also, it identified about $1.453 billion as appropriate additions to the baseline. These additions to the baseline they indicated were typically and traditionally the types of items that are normally included in program baselines.

They also identified about $1.1 billion in other potential costs if the program's scope is expanded.

The OSD independent estimating team essentially did a risk analysis of the estimates. They indicated that in relation to the baseline cost itself they believed that the baseline could be exceeded by $4.74 billion, which would indicate a total estimate of $25.27 billion.

The OSD team also identified several appropriate additions to the baseline in the amount of $1.433 billion and it was very close to the Air Force independent estimate. That is the OSD independent

estimate of costs outside the baseline that they believe were appropriate for inclusion in the baseline.

They also estimated certain expenditures that could be made that would be outside the program. These are potential costs. They didn't make estimates for all the same items as the Air Force independent estimate.

For the items they did evaluate they estimated .474 billion dollars in potential costs.

We will look at those on chart 5.

Chart 4 shows some differences in interpretation of what could and should be included in the baseline. We believe the rules for establishing cost baselines for programs are subject to a number of interpretations and chart 4 shows some of those regulations and the words.

Chart 5 is a more detailed breakout of the estimates.

[Chart 4]

GUIDANCE FOR BASELINE COST ESTIMATES

DODI 5000.33—"Provide a foundation for weapon/support system cost communication among Congress, The Department of Defense, and Industry."

Program acquisition costs include development, procurement and construction costs. However, some cost items may be excluded from the estimate when funded by a separate budget line item.

AFSCR 550-18—"The program manager's best estimate of the cost to accomplish the effort described in current program direction."

The baseline estimate is to include all directed effort for which the program office has management responsibility, regardless of the source of funds.

DODI 7000.3—Provides "standardized format and instructions . . . For summary reporting of technical, schedule, quantity, and cost information concerning major defense systems."

Program acquisition cost defined as the development, procurement, and construction cost to acquire a major defense system.

CHART 5.—SUMMARY COMPARISON OF ESTIMATE

[In billions of fiscal year 1981 dollars]

Cost category	SPO	Air Force independent estimate	OSD independent estimate
Baseline:			
Airframe	$9.885	$11.258	$11.285
Engine	1.770	1.885	1.800
Avionics	2.885	3.165	3.515
System test	.535	.253	.535
ECO/management reserve	.700	.800	1.162
Nonrecurring production	1.500	1.500	1.500
Support equipment	1.800	1.075	2.588
Other program costs	.335	.314	.355
Initial spares	1.100	1.100	1.730
Multiyear procurement	(.800)	(.900)	0
ALCM and LF/VLF	.800	[1].563	.800
Baseline total	20.530	21.013	[2]25.270
Identified additions to baseline:			
Simulators	0	.340	[3].300
CED/CIP	0	.187	[3].150
Organic depot capability	0	.237	.400
Miscellaneous (first destination transportation, other)	0	.020	.100
Interim contractor support	0	.034	.263
Facilities improvement (contractor production)	0	.068	[3].070

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CHART 5.—SUMMARY COMPARISON OF ESTIMATE—Continued

[In billions of fiscal year 1981 dollars]

Cost category	SPO	Air Force independent estimate	OSD independent estimate
Retrofit costs	0	.567	0
Manufacturing technology	0	0	[3].150
Baseline additions total		1.453	1.433
Total recommended baseline	20.530	22.466	26.703

[1] The Air Force team estimated the cost for only an external ALCM capability.
[2] Although the OSD report did not include a "baseline" estimate of $25.27 billion, its assessment of potential added costs due to risk, when added to the SPO baseline, totals $25.27 billion.
[3] Although not included in the SPO baseline, these items are identified as related programs on the B-1B SAR.

Mr. ADDABBO. On chart 4, in previous hearings before this committee—I think in personnel hearings—we found there was an increase of several millions of dollars—I don't recall the exact figure—for personnel costs which were attributed to the B-1B bomber.

I believe it was for 99 people that they were adding to personnel, but it was separately budgeted.

Would that come under this item where you say by a separate budget line item so the figure of $20.5 billion would not reflect these items which might be hidden or might be off in a different budget item?

Mr. MURPHY. As I read the first item on chart 4, the DOD Instruction 5,000.33, it says that acquisition costs include development, procurement and construction costs.

I think the costs you are talking of are not development, procurement, or construction costs; but the point we make with this chart is that we believe certain development, procurement, and construction costs are often excluded because of the permissive language that follows in that Instruction.

Some cost items may be excluded from the estimate when funded by a separate budget line item. I think that is certainly the case with the estimate on the B-1 program.

However, personnel costs are normally funded out of different budgets and are usually not considered acquisition costs.

Chart 5, the summary comparison of estimates, shows the breakout of the SPO, the Air Force independent estimate, and the OSD independent estimate.

The first block of numbers is the cost elements included in the baseline. The last two columns measure the independent estimates against the individual cost elements in the SPO baseline.

The second block of numbers are the identified additions to the baseline that were established by the Air Force independent estimating team and the OSD independent estimating team.

Of the individual line items under the baseline, the air frame, avionics, the lines called ECO management reserve, support equipment, initial spares, and multi-year procurement, are the ones that were subject to the most contention among the estimating teams as to what dollar values should be assigned.

Identified additions—we will talk to some of those here. One thing I would like to mention here is that the simulators, the CED/

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CIP, which is continued engineering development/component improvement programs for engines, facilities improvements, which are expenses for contractor production improvement, and manufacturing technology, items all footnoted with a C, are mentioned on the B-1B SAR as related program costs.

Two items here——

Mr. EDWARDS. Excuse me. You mean by that that those items were known early on? Is that what you are saying? That they would be in addition?

Mr. MURPHY. They are noted on the B-1 SAR.

Mr. EDWARDS. I don't know what that shows us.

Mr. MURPHY. By putting them on the B-1 SAR as related items, that indicates that they are directly related to the B-1B program.

Mr. EDWARDS. What I am trying to get from you is, are those new additions or were they additions added on early on in the program?

Mr. MURPHY. The December SAR for the B-1B program was the first SAR under the new program. They are mentioned on that SAR.

Mr. EDWARDS. So these are not surprises is what I am saying?

Mr. MURPHY. They are not new.

Mr. EDWARDS. Fine. Thank you.

Mr. MURPHY. Our contention is that these items should be a part of the baseline and should be measured against actual cost as history evolves.

Two other items here: Organic depot capability and first destination transportation were ordered into the baseline by the Deputy Secretary of Defense in November of 1981; however, it was not permitted that the baseline increase.

For example, for the item called support equipment, $1.8 billion included in the SPO baseline now includes depot capability; however, the estimate was not increased; the baseline dollars are the same. That item is determined to be included. Similarly, first destination transportation is included in the baseline without an increase in the dollars.

Chart 6 is self-explanatory. Unless you have a question there, we will go on to chart 7.

In chart 7 we discuss the escalated cost of these programs.

CHART 7.—SUMMARY COMPARISON OF COST ESTIMATES IN BILLIONS OF FISCAL YEAR 1981 AND THEN YEAR DOLLARS

Description	SPO	Air Force independent estimate	OSD independent estimate
Baseline program—fiscal year 1981 dollars	20.53	21.01	25.27
Baseline program—then year dollars	29.23	28.45	(1)
Escalation indices as of	(2)	(3)	

[1] The OSD estimating team reviewed the B-1B costs only in terms of fiscal year 1981 dollars.
[2] May 1982.
[3] September 1981.

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[Chart 8]

DEPUTY SECRETARY OF DEFENSE MEMORANDUM NOVEMBER 4, 1981

[All dollars are fiscal year 1981]

Reviewed Air Force and OSD estimates of B-1B acquisition cost. To ensure the program does not exceed $20.5 billion, the following steps are to be taken:

No changes in the program or major configuration changes without prior approval of Deputy Secretary of Defense.

Control the Design to not exceed the 6 percent engineering change order (ECO) budget.

Fund simulators under a separate program element.

Provide an Air Force Depot maintenance capability within the $1.8 billion projected for support equipment.

Fund interim contractor support if needed under a separate program element until Air Force capability is available.

Proceed with a vigorous multiyear contracting program to achieve $800 million in savings.

Fund manufacturing technology program, engineering component improvement program, and facility improvements from general Air Force funds provided for these purposes.

Chart 8, the Deputy Secretary of Defense in November of 1981 had available to him the SPO estimate, the Air Force independent estimate, and the OSD estimates. He essentially endorsed the Air Force approach to the baseline, including the exclusion of certain costs, and he directed that the depot capability we just discussed, and the first destination transportation be absorbed within the baseline estimate.

In addition, he indicated no changes in the program or major configuration changes to the aircraft could be made without prior approval of the Deputy Secretary of Defense.

He also endorsed the Air Force proceeding with a vigorous multiyear contracting program to achieve an estimated $800 million in savings.

Chart 9 is a listing of those items we call potential costs if the program is expanded.

CHART 9.—POTENTIAL COSTS IF PROGRAM IS EXPANDED

[In billions of fiscal year 1981 dollars]

Item [1]	Cost estimate		
	SPO	Air Force independent estimate	OSD independent estimate
AFT bay enlargement		.623	
Fatigue test article	.120	.071	.070
Additional flight testing		.104	.104
Forward looking infrared	.140	.097	.125
Low band transmit	.070	.014	[2]
Communications countermeasures	.210	092	[2]
CAT D/PAL CD	.080	.066	.065
Electromagnetic pulse testing	.024	.008	[2]
Avionics standards	.145	(.004) /.110	.110
Total	.789	1.071-1.185	.474

[1] There are no current approved plans to incorporate these items in the B-1B. The AFT bay enlargement to accommodate cruise missiles and CAT D/PAL CD incorporation have been rejected by OSD. The remaining items represent potential costs to the current program, or future costs to provide additional capabilities.

[2] No estimate.

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Mr. ADDABBO. On page 8, where you say fund manufacturing technology program, engineering component, improvement program, facility improvements, and general Air Force Funds, this is not the usual way of doing business?

Usually that will be charged to the item or that weapon system?

Mr. MURPHY. That is our understanding.

If you turn to chart 15, we have here some examples of other programs, though we recognize it is not a large history of other programs. There are listed there a few aircraft programs. This shows at least some costs for those elements have been included in the baseline for the F-15, F-16, and the A-10 programs, indicating to us that exclusion of them from the B-1 program is not the normal practice.

As for the potential costs on chart 9, these items are not presently included in the baseline program. It is our understanding that inclusion of these would require addition by the Deputy Secretary and most likely an adjustment to the cost baseline of $20.5 billion in fiscal year 1981 dollars.

The list is here. A footnote on two of them, the aft bay enlargement, the first item, and the one toward the bottom, CAT D/PAL command disable we understand have been essentially rejected by OSD. There are no plans to do them and they indicate that perhaps there will never be a plan to do them.

Several of the other items, for example, a fatigue test article is not in the program. The fatigue test article is a structural item, an airframe that is acquired, put in a test rig, and shaken down in accordance with the cycles of an aircraft you would expect it to see in normal service.

The purpose is to determine the fatigue life of the aircraft and to determine before actual aircraft get many flight hours on them just what the aircraft could experience in terms of any fatigue cracks or problems in that arena.

Although this is not included in the program, there is an option in the contract with Rockwell to acquire such a fatigue article. The option price of $120 million, must be exercised by October 10, 1983.

So there is an indication that they have thought very seriously about including a fatigue test article. At the present time, of course, they have not exercised the option. The funds are supposedly not in the baseline, and unless they are included in there by a decision by the Secretary or Deputy Secretary of Defense, then presumably they will not exercise their option.

Mr. ADDABBO. Would that possibly be an important item? Could that possibly be funded under other budget items?

Mr. MURPHY. Possibly it could, yes. I don't know exactly where they might put it at the present time. I think this item has enough visibility that they really have not much alternative at this time than to include it in the B-1 baseline if they decide to acquire a fatigue test article.

Mr. ADDABBO. Without the aft bay enlargement, can the B-1 carry cruise missiles internally?

Mr. MURPHY. Yes.

Mr. ADDABBO. So that aft bay enlargement is not a necessity?

The footnote has reference to accommodating cruise missiles.

Mr. MURPHY. It is not a necessity to accommodate cruise missiles. They require a movable bulkhead to permit them to change the sizes of the bomb bays they have.

They consider aft bay enlargement a very large expense that would require a delay in the program and believe at this time that it is unnecessary.

Additional flight testing is an item that has been the subject of some contention; however, it is not a large cost item. On chart 11 you see the Air Force has essentially determined that they will acquire a 1,000 hour flight test program.

Rockwell proposed 1,300 hours and some other engineering officials have determined that they would like to see a 1,300 to 1,400 hour program.

The program manager described the 1,000 hour program as a severely constrained flight test program; certain follow-on test and evaluation, of course, is to be funded by the Strategic Air Command, and certain IOT&E objectives will also fall out in the Strategic Air Command's testing later on after delivery of the aircraft.

Mr. ADDABBO. On previous programs, which were SAC programs, would this normally be funded out of SAC or normally be charged to the weapons system?

Mr. MURPHY. Normally the development, test, and evaluation and the initial operational test and evaluation costs are funded within the program baseline.

USDR&E and Air Force officials believe a thousand hour flight test program will provide all the essential testing required to provide the information needed about weapons systems operations before initial operational capability.

They essentially have built a flight test program that is austere and geared to determining critical elements of information they need to know before the aircraft is——

FLIGHT TESTING TIME

Mr. YOUNG. Mr. Chairman, how many hours of testing have they run so far based on this one thousand hour?

Mr. MURPHY. They had 1,850 hours on the B–1A program. The B–1B program includes a 1,000 hour flight test program.

Mr. YOUNG. Have they completed the 1,000 hours?

Mr. MURPHY. The 1,000 hours will not begin until April 1983.

Mr. ADDABBO. That is 1,000 hours in addition to the 1,000 hours plus put on the B–1A?

Mr. MURPHY. The thousand hours is in addition to the 1,850 hours they already have experienced.

Mr. YOUNG. Would any of that testing be considered as part of the 1,000 hour testing on the B–1B?

Mr. MURPHY. No.

Mr. YOUNG. Nothing there would be compatible?

Mr. MURPHY. Of course, the experience they have had with the B–1A program has some applicability—they have stated the aircraft is 80 percent similar to the B–1A. Therefore, much of the data they have collected from the B–1A program is of value. I think our primary concern is not the airframe in terms of testing, but primarily the offensive and defensive avionics.

A good deal of the test program down the road, into the mid and late eighties, will involve offensive and defensive avionics.

Forward looking infrared radar is an item that could be installed in the B-1B. However, it is not included in the program because they believe the multi-mode radar will be sufficient to accomplish the function that the forward-looking infrared radar would accomplish.

The low band transmit and communications countermeasures are essentially defensive options that may later be added to the program.

However, any decision as to when to add them and exactly what to add has not been made.

We talked about the CAT D/PAL.

Electromagnetic pulse testing; this could be accomplished perhaps in the late eighties. They built the Trestle to do this testing a few years back. The B-1 will likely be tested in the late eighties on that Trestle.

The B-1 is probably the first aircraft to be acquired as a hardened aircraft from the beginning.

Avionics standards. Jim, you want to explain avionics standards, what it is?

B-1B AVIONICS

Mr. GABRIEL. Yes. When the B-1B program was fist proposed, the Air Force in order to protect schedule and to lower costs, desired to go with the software and the computers that they had on the B-52 OAS CMI modification plus some of the items on the original B-1A program.

They did this because it was cheaper and protected the schedule.

The Air Force Advisory Council to the B-1 program directed that they have a parallel study conducted to upgrade the avionics to what the Air Force has adopted as its military avionic standards.

Basically the use of military standards allows competitive rebuys, that is, competitive bidding on replacements.

They completed the study and have decided to use the military standard group A, the wiring in the airplane; to use a military standard computer in the airplane, but, however, they will use the Boeing Company's peculiar software to run the avionics in the airplane; not the avionic standard software.

It does allow them, however, at a later date, to go to the military standard software. So, in a sense, most of the desired standards are being put into the airplane.

Mr. MURPHY. The balance of the charts primarily go into some of the reasons for disagreements in the cost estimates plus we have some of the charts that provide additional insights that we have gained in looking at these estimates.

AIRFRAME COST

In terms of the difference in airframe cost back on chart 5 between the SPO, the Air Force independent and the OSD independent estimate, the primary differences involved in those estimates, the $9.8 billion and the $11.2 billion figures, are the learning

curves that they would expect to see as the aircraft are built over the years.

The learning curve primarily is an indication of how much less the next airplane will cost you in terms of man hours expended.

CHART 10.—LEARNING CURVES

[In fiscal year 1981, dollars in millions]

	Lot I (1 aircraft)		Lot II (7 aircraft)		Lot III–V
	Hours	Cost	Hours	Cost	
Airframe:					
SPO estimate	2.034	$64.7	7.751	$246.5	?
Actual negotiated	2.077	61.0	9.126	259.2	?

AVIONICS

	Lot I–II	Lot II–V
SPO estimate	748.0	?
Actual negotiated	749.0	?

The airframe and avionics learning curves are more optimistic than achieved on other programs.
The Air Force testified that similar learning curves used by Rockwell were "unduly optimistic".

Chart 10 shows what they have experienced in negotiating the airframe contract versus what they had built into their baseline of $20.5 billion.

This perhaps is an early indication that they have not been able to achieve the learning curve; the SPO has not been able perhaps to achieve the learning curve they had estimated.

The SPO estimate for lot 1, which is one aircraft, was fairly close to what they actually negotiated for that one aircraft.

Lot 2, the seven aircraft program, we see a difference of about 17 percent in what they were able to negotiate versus what they had built into their estimate for the man hours involved in building those seven aircraft.

However, they did achieve some lesser rates in acquiring those aircraft, in negotiating the price and, therefore, the total cost for the Lot 2 manufacturing hours is only about 5 percent higher.

Nevertheless, this is perhaps an early indication that the learning curves might not be achieved—you can't say that with a great deal of certainty because you have a lot of aircraft to be proposed yet.

Mr. ADDABBO. You have a question mark on Lot 3 of five.

Do you know when the DOD will actually receive the contractor's proposed prices for that lot?

Mr. MURPHY. They are to receive proposals in December 1982 for Lot 3.

We also understand that they will at that time receive proposals for the Lot 4 and 5 in trying to analyze the multiyear procurement.

Mr. ADDABBO. At this point in time there is no way of estimating what that might be?

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Mr. MURPHY. Lot 3? No.

We have a chart about what they expect to save by going to multiyear procurement.

We talked about the flight test program, charts 11 and 12.

[Chart 11]

CONSTRAINED FLIGHT TEST PROGRAM

Rockwell proposed 1,300 hours for flight tests.
1,000 hours negotiated.
Described by the B-1B program manager as "a severely constrained flight test program".
O.T. & E. objectives not satisfied by the combined D.T. & E./I.O.T. & E. will be addressed during F.O.T. & E. F.O.T. & E. is to be funded by sac.
U.S.D.R. & E. and AF officials said 1,000 hour flight test program provides all the essential testing required before IOC.

[Chart 12]

AIR FORCE INDEPENDENT ASSESSMENT OF FLIGHT TEST PROGRAM

"A program of 1,000 hours of developmental flight testing will provide a minimal amount of data to support a valid IOC. This program is success oriented and has a relatively high degree of risk and only limited physical and functional weapon certification will be accomplished. Full nuclear certification will not be complete, and no climate tests will be done.

A program of 1,300-1,400 hours would reduce risk to a medium level and should provide the necessary testing and resultant data to verify the aircraft capability for most of the flight envelope, weapons, and nuclear certification. This level of testing also is judged reasonable from a schedule consideration as it allows for realistic flying hour rates for each of the three test aircraft, it also terminates at IOC with all scheduled testing complete."

[Chart 13]

LIMITED ECO BUDGET

Reduced to $700 million from initial estimate of $1.1 billion.
Only minimum essential changes allowed.
Area of concern to Air Force Logistics Command.
U.S.D.R. & E. and AF officials say believe $700 million is entirely sufficient.

Chart 13 shows some of the figures on the disagreements and what is called the engineering change order budget.

Going back to chart 5—the SPO estimated $700 million; the OSD independent estimate shows the largest difference there; they talk about $1.162 billion.

The OSD figure includes some retrofit costs that are not included in the SPO estimate. Again retrofit costs are generally included in a program estimate.

[Chart 14]

MULTIYEAR PROCUREMENT CRITERIA

Approval of MYP for the B-1B may require a waiver to current OSD policy. The criteria for selecting MYP candidates, and a comparison of the B-1B program to this criteria, is shown below.

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Criteria	*B-1B status*
1. Benefit to the government—should yield substantial savings.	$800 million savings. However, present value discounting not considered.
2. Stable configuration—R.D.T. & E. completed; technically mature.	MYP approved 3 years before R.D.T. & E. is complete; 1½ years before delivery of first production aircraft; initial flight tests barely begun; 1 year before start of avionics flight tests.[1]
3. Reasonable assurance that cost savings are realistic.	Savings are based on judgemental assumptions, rather than firm contractor proposals or negotiated prices.[2]
Stable requirement and funding	No reason to question.

[1] Air Force officials believe the B-1B will offer a stable configuration and be technically mature at the time MYP contracts are awarded because of the prior airframe and engine development and testing during the B-1A program, and because the B-1B avionics are partially common with the B-52 and F-16.
[2] Contractor proposals will be received about December 1982.

Chart 14 is a chart dealing with multiyear procurement. On the left of the chart, what we have done is laid out the OSD established criteria for getting approval of multiyear procurement.

On the right are some GAO views of where the B-1 stands.

The first one, the benefit to the government should yield substantial savings. The Air Force has gone on record as stating that they estimate $800 million savings by acquiring Lots 3, 4, and 5 as a multiyear buy.

The $800 million, however, is not a figure that is derived from a lot of detailed analysis. It essentially was obtained by multiplying 7.7 percent of flyaway costs for those 92 aircraft; that is how they come up with the number of $800 million.

Mr. ADDABBO. From what I understand, the OSD independent cost estimates disagree and assume there could be no savings for multi-year?

Mr. MURPHY. The OSD independent team concluded they shouldn't count on multi-year procurement being approved and they are not sure they should count on $800 million. It is an unknown, essentially, at this time.

Mr. ADDABBO. Based on the criteria for multi-year, in your view, would a commitment to multi-year procurement at the date as planned by the Air Force be a little premature in that there would still be a substantial amount of R&D required?

Mr. MURPHY. Under Item 2, the criteria is that RDT&E be completed. This is how the OSD rules read. The multi-year plan, for a fiscal year 1984, 1985, 1986 combined buy, would require that they go on contract probably the beginning of fiscal year 1984 or October 1983.

At that time, you are about three years before the completion of RDT&E. In addition, there would be about $1.2 billion of RDT&E budget to be approved; so we think that there is a good deal of RDT&E yet to be completed that does not apparently meet the criteria.

In terms of the benefit to the government, it should yield substantial savings. It is our opinion and we went on record recently in a letter to you, that before you can make a determination of the savings, you have to have in hand firm contract proposals for an annual year buy and for the multi-year procurement package; and

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then discount those back to present value before you can really make a good analysis of what your savings are. So our view at this time is that we don't know whether $800 million savings is realistic or not.

Any questions on that chart other than those?

In terms of the simulator, the development and acquisition of a simulator for the B-1 program is funded outside the baseline. Of course this has been an item that has traditionally been included in the baseline.

CHART 15.—COSTS INCLUDED AT LEAST PARTIALLY IN OTHER WEAPON SYSTEM BASELNE ESTIMATES BUT EXCLUDED FROM THE B-1B BASELINE

Cost element	Some costs (not necessarily all) included in weapon system's baseline estimate		
	F-15	F-16	A-10
Continuing engineering development	Yes	No	Yes.
Engine component improvement program	Yes	No	Yes.
Interim contractor support	Yes	Yes	Yes.
Production facilities improvement	Yes	No	Yes.
Simulator development and production	Yes	Yes	Yes.
Development of depot support capability (nonengine) [1]	Yes	Yes	Yes.
First destination transportation [1]	Yes	[2] Yes	Yes.

[1] Not initially part of the $20.5 billion baseline, but subsequently directed to be included.
[2] R.D.T. & E. only

[Chart 16]

AIR FORCE SYSTEMS COMMAND (AFSC) MESSAGE DATED SEPTEMBER 11, 1981

"This headquarters agrees that, in accordance with applicable AFSC directives, B-1B aircrew training device development and production should be managed by the simulator SPO regardless of the funding scheme. However, a separate program element for B-1B aircrew training devices is counter to the tenets of the planning, programming, and budgeting system in which all the components of weapon system are accumulated in a single program element for management visibility. A concensus of senior air staff leaders at meeting on Sept. 10, 1981 appears to support the approach of aircrew training device projects within the B-1B development and production program elements contingent upon added funding for this purpose."

Chart 16 includes an extract from an Air Force Systems Command message back in September that indicates that using a separate program element for the B-1B air crew training device is counter to the tenets of the programming, planning, and budgeting system. I think an important point in what they say is a quote "In which all the components of weapons system are accumulated in a single program element for management visibility."

[Chart 17]

OBSERVATIONS

Observations:

B-1B baseline cost estimate approved by the Deputy Secretary of Defense excludes cost elements that will be incurred and are usually included in a program estimate. During acquisition of the B-1B, over a billion dollars will be funded in program elements not identified specifically with the B-1B baseline estimate.

Guidelines on what should be in the baseline are unclear. Other weapon systems have also excluded certain directly related acquisition costs from their estimate.

Excluding program acquisition costs from the baseline provides poor visibility of annual requests for funds as well as total program costs.

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Overall, our observations are the B-1B baseline cost estimate approved by the Deputy Secretary of Defense excludes cost elements that will be included and are usually included in a program estimate. During acquisition of the B-1B, over a billion dollars will be funded in program elements not identified specifically with the B-1B baseline estimate.

We believe the guidelines are not very clear and they could probably be reworked in order to provide greater uniformity across weapons systems so that baselines are more comparable.

We believe excluding the acquisition cost from the baseline provides poor visibility of the annual request for funds in addition to the total program costs.

Mr. ADDABBO. The gentleman from Alabama?

ITEMS NOT INCLUDED IN THE COST ESTIMATE

Mr. EDWARDS. Thank you, Mr. Chairman.

On chart 9, did you make a judgement or were you charged with making a judgement as to whether any of these items were held back intentionally?

Mr. MURPHY. Any of these items held back intentionally?

I think they were all proposed additions to the program at one time. I think, yes, they are all intentionally not in the program.

Mr. EDWARDS. Well, intentionally not in the program, but to be put in the program as soon as they fulfilled their $20.5 billion commitment.

Let me preface it this way: We all know that we improve systems after they are built. The F-16 right now is in the process of being improved, just as an example. It is not an unusual thing. We improve tanks rather than build new ones all the times.

My question is—trying to be as objective as possible—are the things you have listed on Chart 9 or perhaps in other places in here the kinds of improvements that would normally follow on a production of a weapon system or are they the kinds of things everybody in his right mind knows should have been included in the very beginning?

You have gone through them here and there; but I am really trying to get at whether somebody is trying to take us to the cleaners or whether these are sort of normal operations?

Mr. MURPHY. I think some of these will find their way into the program over time. I don't know about the fatigue test article. That's an item of disagreement. There is an option in the contract. Normally, if you are going to buy a fatigue test article, it's part of the baseline.

Mr. EDWARDS. I didn't see it listed on chart 15 in your comparison chart. I don't believe it was listed there. Is there a reason for that?

Mr. MURPHY. It wasn't listed there. However, I know for the F-15, F-16, they did acquire a fatigue test article.

There has been some fatigue testing in the B-1A program. They tested the wings and the wing carry through structure. However, they did not test the fuselage or the tail section. That is what this program is to do. If they don't acquire that article, they won't be testing the fuselage and the tail section for fatigue.

I think some of these things, the low band transmission communication countermeasures, some of those things might eventually creep into the estimate. Just how they get in there, I am not sure.

EMP testing, I think that will eventually happen. They have a Trestle. It might have even been built for the B-1. They will most likely put the B-1 on it and test it at some time.

Avionics standards——

Mr. EDWARDS. Let's take that as an example. I am asking you questions about things I don't know anything about. I am not trying to prove anything at all one way or the other.

The electromagnetic pulse testing, that is what you are talking about?

Mr. MURPHY. Right.

Mr. EDWARDS. Is that the kind of thing, in your judgement, that should be on a B-1 when it starts to come off the production line?

Mr. MURPHY. The B-1 is built as an EMP hardened aircraft. The only way that you can determine for sure how hard it is to test it.

Mr. EDWARDS. So in your view, that should be an item of procurement that should be included in the $20.5 billion?

Mr. DAY. It should be engineered into the aircraft. It should not be something done later.

Mr. MURPHY. The cost of hardening the B-1 for EMP resistance is included in the baseline, included in the basic design of the aircraft. The line we are talking about here is really just testing it, putting it on the Trestle out in New Mexico and pushing buttons and seeing what the results are.

Like I say, I think it will eventually happen. OSD believes that they will eventually do it. It is not a part of the baseline cost of the B-1. However, should it be a part of the baseline cost?

Mr. EDWARDS. That's what I am asking you.

Mr. MURPHY. I tend to believe it should be.

Mr. EDWARDS. We all know, I think, that there is a large amount of concurrence in the B-1 program. I don't remember the numbers. I am sure the Chairman remembers them. It seems to me on Plane 60-some-odd you would still be spending R&D money; am I recalling that correctly?

Mr. MURPHY. The R&D program continues out in to 1987, I believe.

Mr. EDWARDS. Staff says I am basically right, that it would be way out there.

Mr. BERTINUSON. Okay.

Mr. EDWARDS. Your argument or your conclusion, then, if I understand what you said earlier, is that that being the case—R&D money to be spent way out, some of the test equipment perhaps not being procured at the time that you would think it should be procured—it would be arguable that the program may not be ready for muti-year procurement at the time that it is suggested it should be.

Have I drawn the right conclusion from what you have said?

Mr. MURPHY. I think there is a question, certainly, as to whether the B-1 will have completed sufficient amount of its thousand hour flight test program and a sufficient amount of the development program by the beginning of fiscal year 1984 to justify multi-year procurement. I think it is a question that has yet to be dealt with.

In addition, the savings, we believe, are quite uncertain at this time. Just how much we are going to save, just what you know about the aircraft——

Mr. EDWARDS. Savings from multi-year?

Mr. MURPHY. Right.

Mr. EDWARDS. There may be some, none, more; you just do not know right now?

Mr. MURPHY. The estimate is $800 million. Our position is that you really cannot make a good estimate until you have in hand firm contractor proposals on a multi-year basis and on an annual year basis for the multi-year—for the years you want to deal with.

Mr. EDWARDS. Jumping over to your conclusions on chart 17, your observation is that the program would probably require another billion dollars; is that right?

Mr. MURPHY. We are referring here to the $1.4 billion estimated that are funded outside of the baseline of the B–1B program; back to chart 5. It's the ones in the second block of numbers.

We are saying over a billion dollars. That is costed in fiscal year 1981 dollars. That is a number that has not been escalated here. If you look at the last block of numbers, both the Air Force independent and the OSD-independent teams estimated roughly $1.4 billion for those items that are outside the baseline.

Mr. EDWARDS. That is where you get that observation?

Mr. MURPHY. Right.

Mr. EDWARDS. If you are right, then your assessment on chart 9 would substantially increase; would it not, the $1.4? To the extent that you are right?

Mr. MURPHY. For the items on chart 9 that are later included in the program—and some of them may be—yes, you will increase the program baseline.

Mr. EDWARDS. You are saying in your observations over a billion dollars; but if your assessment of chart 9 is accurate, then it could perhaps be over $2 billion?

I am not trying to put words in your mouth. I am trying to understand what you are saying.

Mr. MURPHY. There are additional things there that might some day be added. Maybe someday isn't that far away; I am not sure but they could be later added back into the program. They could decide to do these things.

For example, a fatigue test article; they have to make a decision before October 10, 1983 whether to exercise the option that they have in the contract. If they decide that they are going to exercise the option, that has to be included in the baseline; funds have to be requested from the Congress in order to accomplish that.

Mr. EDWARDS. What you are saying to us then, if I understand it correctly, is that on chart 5, where you identify additions to the baseline to the total of $1.4 billion, you are more certain in your mind that they should have been included in the baseline than you are those items listed on chart 9?

Mr. MURPHY. I think that is a correct assessment.

Mr. EDWARDS. In your observations, you comment on the $800 million, the multi-year procurement number; but in the observations, you do not comment on that. I gather the reason is that

there is no certainty in your mind as to what the savings would be, if any?

Mr. MURPHY. This is correct. We are not certain that $800 million is a good number. We are not certain——

Mr. EDWARDS. You question how they could have come up with that number?

Mr. MURPHY. I know how they came up with the number. I question whether there is any certainty even to their calculation.

Mr. EDWARDS. Thank you, Mr. Chairman.

Mr. ADDABBO. The gentleman from Pennsylvania?

Mr. MURTHA. No questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Washington, Mr. Dicks?

Mr. DICKS. Is it your understanding that despite the higher baseline cost estimates from the Air Force and the DOD independent analyses, that the Department's official position is that $20.5 billion figure remains valid?

Mr. MURPHY. That is the position—their position is that $20.5 billion remains valid and that in order to conclude that, you have to also conclude that certain items are inherently funded outside of the baseline.

Mr. DICKS. Which normally would be attributed to the program?

Mr. MURPHY. Correct.

CREDIBILITY OF THE AIR FORCE

Mr. DICKS. It is my opinion based on the hearings we had last year that the Air Force will do just about anything in terms of manipulating the numbers in order to sell Congress on programs that it is advocating. Last year we were comparing what they were doing here against the advance technology bomber.

What I am concerned about is you have been over there, looked at their numbers. I note in your testimony that you say that you think that they, in good faith, are trying to bring it in at that number.

How can you say that in light of the fact that they are taking a number of important items and funding them somewhere else in order to fool the Congress or fool GAO or fool the Administration?

This seems to me that it is another example of a buy-in effort on their part.

That is pretty heavy rhetoric, but isn't it true if they are taking items that would normally be associated with a program and funding them somewhere else, that they are trying to manipulate and distort the number in order to buy in this contract?

Mr. DAY. The important thing here is they must disclose and we must be maintaining surveillance over their management of the program in order to make sure they are disclosing to the Congress costs associated with the program. I think the fact that it is not included in the baseline is important but I wouldn't conclude that by not including it in the baseline, that there is some manipulating being done.

Mr. DICKS. If it is normally in the baseline and it isn't in the baseline on this program, why are they doing it if not to get the number down?

Mr. DAY They have made a commitment to the $20.5 billion; and——

Mr. DICKS. So they take a number of items and fund them outside the 20.5, and say we are at 20.5. Is Congress going to be that naive to say they have done their job? They have stayed within the baseline? You are supposed to be telling us, hey, listen, these guys are trying to pull a fast one on you.

Mr. MURPHY. This is one of the purposes of our briefing, to apprise you of the numbers that are included elsewhere in the budget.

We first surfaced this issue in October 1981.

Mr. DICKS. We congratulate you for that.

Mr. MURPHY. That was shortly after the announcement was made.

Thus, if they did intend to manipulate the numbers; it didn't last very long.

Mr. DICKS. They come up here and tell us, Oh, no, this is $20.5 billion; that's all we want. Kelly Burke sat over there and testified over and over again, "This is all we are going to need, yes; we can live with that."

Then we find out all these items are being funded outside and that it could be $4.7 billion more on the baseline. Isn't that the OSD independent analysis?

Mr. MURPHY. 1.4.

Mr. DICKS. What is this OSD independent analysis?

Mr. MURPHY. That comes up to additional 1.4.

Mr. DICKS. Risk analysis indicated at SPO baseline cost may be exceeded by $4.74 billion. 1.1 is the Air Force independent estimate.

Mr. MURPHY. Right.

Mr. DICKS. Can you imagine, now we have the OSD independent estimate which I would have a lot more faith in than anything I get from the Air Force these days and it's up $4.74 billion.

Mr. MURPHY. That is only for the baseline program.

Mr. DICKS. Is that without the program additions?

How much are they on top? So we are up to $5.74 billion, if you take the OSD estimate that the baseline was inaccurate, which I assume it was; then you have the 1.1 that the Air Force admits to. You know when the Air Force admits to that much, you know it is probably more.

So we are talking about at this point a 25 percent overrun. We haven't even started.

Mr. MURPHY. That calculates out roughly 25 percent higher than the SPO baseline estimate.

Mr. DICKS. You know what bothers me? I have just gone through a very lengthy fight with the Air Force on another issue in which the Air Force leadership in my judgment distorted the numbers of firm, fixed price over that was made by the Boeing Company on 747s and at the same time gave the very—best case analysis—to Lockheed's C-5 proposal.

So those numbers are then transmitted to the Hill and the Armed Services Committee says well, the Air Force says these numbers aren't right and this is what the real number is; and so yesterday, members of the Congress wanting to believe the Air

Force would not lie, would not distort, would not give false information to the Congress will quote those numbers on the floor as if they were the gospel.

This is what offends me, because I know that they didn't tell us the truth last year on the B-1. I know for a fact that they didn't tell us the truth this year on this issue. It has a profound impact on Congressional decision-making because people wan't to believe that the Secretary of Defense and the Air Force would not engage in that kind of deliberate distortion.

So this, to me, is absolute proof that they will do anything under any set of circumstances to get their way up here and they will take these numbers and use them in any way; they will shave them, trim them, fund things offline in order to sell this institution, to fool us; and so I think what you are doing here is terribly important.

I think it is important to the taxpayers of this country—and I appreciate the fact that you did disclose this early—late last year. I just hope that in this year's decision-making process, we can use your professional advice to get some honest numbers so when members make a decision on whether to go with this program or another program, they have numbers that are credible and not numbers that have been manipulated by the Air Force leadership in order to sell programs on Capitol Hill.

To me it is really offensive when we can't any longer trust the military leadership of this country to present honest figures to this Congress. To me it is a very serious indictment about their professional integrity, their credibility; it just says something about how far off track we have gotten.

So I applaud what you are doing here. I am going to do everything I can to try to get these numbers out so that members of Congress realize that last year they probably were sold a bill of goods on the B-1.

I commend the Chairman for holding this hearing.

Mr. EDWARDS. Will you yield?

Mr. DICKS. Yes.

Mr. EDWARDS. Now then, I just need to be clear on what you said.

You commented on the $1.4 billion item that Mr. Murphy has been talking about on chart 5. You also referred to a $4 billion plus item, I thought; but you lost me where that money was.

DIFFICULTY OF ACQUIRING CAIG ESTIMATE

Mr. MURPHY. The difference between the SPO and CAIG baseline estimates; first block of numbers.

Mr. EDWARDS. Is it the CAIG estimate you had so much trouble getting?

Mr. MURPHY. Yes. The CAIG and the Air Force independent estimate.

Mr. EDWARDS. There is a magazine called Aviation Week and Space Technology, June 28, 1982, where it says "Since the Defense Dept. repeatedly refused to supply information about the analysis by CAIG and ICA to Congress,"—and what is that?

Mr. MURPHY. Independent Cost Analysis.

Mr. EDWARDS. "Levin said, 'GAO was able to obtain it only after threatening court action.'" Is that right?

Mr. DAY. Yes, sir.

[The article referred to follows:]

[From The Aviation Week and Space Technology, June 28, 1982]

USAF REAFFIRMS B-1B COSTS IN FACE OF GAO DISCLOSURES

WASHINGTON.—The Air Force has reaffirmed the validity of its $20.5-billion cost figure for the Rockwell International B-1B bomber program in the face of disclosures by the General Accounting Office that there are higher internal Defense Dept. estimates.

The GAO will recommend changes in the rules that govern the preparation of baseline costs in July so that all aircraft programs will use similar data.

The GAO learned that the Air Force Independent Cost Analysis baseline estimate is $21.013 billion, while the Pentagon's Cost Analysis Improvement Group told the Office of the Secretary of Defense (OSD) the cost could be $25.27 billion.

The higher estimate assumed more problems would occur in the program development than were assumed by other estimates.

"This independent OSD risk analysis overlooks the extensive experience and development accomplished during the six years and 1,895 flight test hours of the initial B-1 program, which gives the current program unusual efficiency and flexibility," Air Force officials said in a statement responding to the GAO report. The statement also said no changes will be made in the aircraft without approval from the Deputy Secretary of Defense.

ACCURATE ESTIMATE

The Air Force Independent Cost Analysis concluded the original estimate of $20.5 billion was accurate to within 3 percent.

Sen. Carl Levin (D.-Mich.) accused the Reagan Administration of trying deliberately to mislead the American people after receiving the cost estimates from the General Accounting Office.

Air Force officials said they provided independent cost estimates to the GAO several months ago, but the Office of the Secretary of Defense withheld the estimate by the Cost Analysis Improvement Group (CAIG), saying it was a confidential communication.

"Since the Defense Dept. repeatedly refused to supply information about the analysis by CAIG and ICA to Congress," Levin said, "GAO was able to obtain it only after threatening court action—and after I asked the Governmental Affairs Committee to consider issuing a subpoena for it—I am forced to conclude the Administrator is deliberately trying to mislead the Senate and the American people about the costs of the B-1 bomber."

The Air Force independent estimate identified additions to the baseline, including simulators, depot capability, retrofit costs and manufacturing capability, and estimated a final total for the B-1B program at $22.466 billion. The Cost Analysis Improvement Group final total was $26.703 billion.

ADDITIONAL COSTS

The Air Force B-1 program office has not determined the additional costs as yet, but will report them fully when the estimates are available, an Air Force official said. Several items were not included in the baseline at the direction of the Office of the Secretary of Defense in a memo on Nov. 4, 1981. Those items include military construction and simulators.

"There's no basing announcement. When somebody tells us what bases we're going to, we will put the number in there," an official of the Air Force B-1 office said. "Simulators are not to exceed $300 million. Why? Because we've reviewed all possible simulator programs and none of them that we are about to do exceed $300 million. It hasn't been finalized because the vice chief of staff of the Air Force just told us to go back and scientifically reconfirm the need for six degrees of freedom of motion on that simulator. So, as soon as that's completed that he's satisfied, we will have a precise number in there," the official said.

"The next question is, why isn't that in the $20.5 billion? We didn't know these things when we made the $20.5-billion estimate," he said.

Simulators were estimated by the independent Air Force analysis to cost $340 million, while the Defense Dept. estimated $300 million. The B-1 project office gave no

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estimate, for reasons the Air Force official explained. The $20.5-billion estimate was prepared by the B-1 office.

The cost estimates were prepared as part of a larger GAO report on rules for baseline estimates. The GAO also is working on a report on the future bomber force, which will be done in a few months.

Air Force officials said they will still meet the $20.5-billion figure, which has been certified by President Reagan.

"Currently, contracts for all major flight systems have been signed. They cover about 25 percent of program costs, and they all support the $20.5-billion estimate. All indicators demonstrate the program is on schedule and within cost goals," Air Force officials said.

GAO officials said they hope the high visibility of the B-1 program will put pressure on Defense Dept. officials to remain within the estimate.

Mr. EDWARDS. Did you, in fact, ultimately obtain the CAIG?

Mr. DAY. We obtained documentation supporting the CAIG estimate. We are satisfied with the material that finally was provided; that is, that it was sufficient for us to do our work.

Mr. ADDABBO. But you never received the CAIG report?

Mr. DAY. We did not get the CAIG report itself. However, we got everything that supports the CAIG report. As I said, we are satisfied with the documentation that was presented.

Mr. EDWARDS. But you weren't satisfied with the way you had to go about getting it?

Mr. DAY. No. That was rather aggravating.

Mr. EDWARDS. Will you yield further?

Mr. DICKS. Yes.

Mr. EDWARDS. In all of these numbers, the SPO—that, of course, being based upon 1980 dollars?

Mr. MURPHY. 1981 dollars.

Mr. EDWARDS. Is there anything in the Air Force independent estimate or the OSD independent estimate that has inflation built into it at all?

Mr. MURPHY. Chart 7 shows those numbers that have been inflated with escalation indexes; only the baseline program dollars has been escalated by the SPO or the Air Force independent estimate.

Mr. EDWARDS. What I really want to know—talk to me in ordinary, everyday, layman language—are these comparisons apples and apples? That is on chart 5?

Mr. MURPHY. Yes. Those are apples and apples. Those are all in fiscal year 1981 dollars.

Mr. EDWARDS. Thank you.

Mr. ADDABBO. The gentleman from Virginia?

Mr. ROBINSON. I have no questions, Mr. Chairman. I apologize for not being here on time.

Mr. ADDABBO. If there are no further questions, thank you very much, gentlemen, for your information.

The committee stands in recess, subject to the call of the Chair.

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TUESDAY, JULY 27, 1982.

NAVY'S MANAGEMENT OF DEFECTIVE GOVERNMENT FURNISHED EQUIPMENT

WITNESSES

HENRY CONNOR, SENIOR ASSOCIATE DIRECTOR, GENERAL ACCOUNTING OFFICE

RICHARD HELMER, SENIOR GROUP DIRECTOR, GENERAL ACCOUNTING OFFICE

PRISCILLA WILLIAMS, EVALUATOR-IN-CHARGE, GENERAL ACCOUNTING OFFICE

INTRODUCTION

Mr. ADDABBO. The committee will continue our hearings with the General Accounting Office staff.

At this time we will discuss a draft report recently issued by the General Accounting Office on the Navy's Management of Defective Government-Furnished Equipment.

Representing the GAO as the primary witness is Mr. Henry Connor, Senior Associate Director, and along with Mr. Connor is Mr. Richard Helmer and Ms. Priscilla Williams.

Mr. Connor, since this is your first appearance before this committee, your biography will be made a part of the record.

[The information follows:]

BIOGRAPHICAL SKETCH OF HENRY W. CONNOR

Henry W. Connor is a Senior Associate Director of the Procurrement, Logistics, and Readiness division, U.S. General Accounting Office. He is responsible for performing audits of supply, maintenance, and distribution activities in all Federal agencies. He is a graduate of Duquesne University and a Certified Public Accountant in the State of Pennsylvania. He has completed the resident program for Federal Executives at the Federal Executive Institute, Charlottesville, Va. Mr. Connor has had extensive experience in a wide variety of audit assignments for the General Accounting Office having spent 6 years with the Field Operations Division, 3 years with the Office's European Branch, 5 years with its Defense Division, 4 years with its Transportation Division, and 10 years with its Logistics and Communications Division prior to being assigned to his present position in January 1982.

Mr. ADDABBO. I would ask that you summarize your statement, and your full statement will be made a part of the record. You may proceed with your opening comments.

SUMMARY STATEMENT OF MR. CONNOR

Mr. CONNOR. Mr. Chairman, we are pleased to be here today to discuss our work on the problems that the Navy is experiencing because of defective material it furnished to defense contractors.

The Navy provides billions of dollars of government-furnished materials (GFM) to private contractors for use in performing construction, overhaul and repair contracts. These materials, which

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are either owned or acquired by various commands, include parts, components assemblies, raw and processed materials, and supplies. They are issued to contractors as part of contractual agreements to be attached to or incorporated into such end products as ships and aircraft.

The Navy spends millions of dollars each year to repair or replace materials found to be defective after contractors receive them. The responsibility for managing defective materials is highly fragmented among the various Navy systems commands and their subordinate commands. The Navy, therefore, could not provide a total figure for defective GFM, even though a number of reports have been issued on the many problems associated with these materials.

Although several of the systems commands had established quality deficiency reporting systems for accumulating this data, the information generated by these systems has usually been of little help in (1) identifying the magnitude of the problems, (2) obtaining corrective actions, (3) helping to prevent future recurrences of the same problems, or (4) taking action against vendors habitually providing poor products.

With only limited audit work at eight contractors' locations, we identified about $31.4 million that the Navy either has spent, obligated, or estimates it will spend for repairing defective GFM.

The Navy's failure to identify the magnitude of defective GFM and their associated costs has precluded the necessary management oversight needed to correct the problems.

Historically, GFM has been cited as the reason for many contract problems. As early as 1972, GAO identified defective and late delivery of GFM as one of five basic factors causing the Navy increased contract costs. Also, in 1975, GAO reported that the need to repair defective GFM was interrupting shipbulders' construction schedules and resulting in delays and claims against the government.

In 1978 DOD, recognizing the need for a quality information system, issued DOD Directive 4155.1. DOD components were to establish a quality assurance program as a component of the acquisition and support process, and to conduct audits to ensure that quality products and services were obtained.

This directive also established that contractors (1) are to be held responsible for the quality of goods and services they provided, (2) must establish quality control programs, and (3) are responsible for the quality of products and services provided by their subcontractors. DOD components were to establish inspections at the destination point whenever practical and were to ensure that contracts were not awarded to contractors known to provide unsatisfactory products or services.

The Navy is generally not holding vendors accountable for the repair or replacement of defective GFM. The Navy's usual solution is to have the item repaired by the receiving contractor or an on-site product's vendor representative. There was seldom any attempt to go back to the products' vendors to obtain a repair or a replacement or a price adjustment to compensate for the repair costs incurred.

For example, Navy officials told us they do not go back against the vendors because most of the GFM items purchased are inspect-

ed and accepted at the vendors' plants by Defense Contract Administration Service representatives. They said the Navy has no recourse against the vendors if the materials are found to be defective later on. They also said the Defense acquisition regulations permit solving the problem by paying the receiving contractor to make the repairs.

We did not evaluate source inspections. However, we did review four Navy quality deficiency reporting systems. The Navy systems identified high percentages of defects for which the cause of the deficiency was vendor quality control. These reports showed that many deficiencies resulted because the items were not made according to specifications, poor workmanship, or other quality control factors.

The Navy continues to award contracts to vendors with histories of providing unsatisfactory products. For example, in an analysis of 12 Navy contracting activities, the Navy Sea Systems Command identified the award of 675 of 929 contracts, 73 percent, to vendors previously identified and reported as having a history of providing poor quality products; 31 of the 54 vendors involved had been on quality deficiency lists for the previous 2 years..

Navy Materials Command officials told us they had been trying for five years to get the Navy's various systems commands to use the data produced by the quality deficiency reporting systems to at least flag problem vendors and require purchasing officers to review the records before placing any additional contracts. They have been unsuccessful in accomplishing these goals, even though Navy studies have indicated that many of the items in the supply system are defective.

In conclusion, the Navy has no central point of control or accountability over defective GFM. The QDR systems it has developed are not working and are not monitored to assure the consistency and interface needed to provide emergency visibility of the scope or magnitude of the Navy's defective GFM problems. Data developed which indicated vendors who habitualllly provided defective items was not being used effectively.

The Navy was not taking action to make vendors accountable for poor quality products provided as GFM. Generally, the Navy was simply paying the contractor who received the defective item to repair or replace it. This procedure is not only costing the Navy millions each year, it is relieving the producing vendors of their accountability for the quality of products provided.

Accordingly, we believe the Navy should:

Bring the Navy QDR systems into agreement with the Department of Defense Directive 4155.1;

Develop a system for maintaining overall financial and logistical data which will provide the management visibility needed to identify the nature and magnitude of the problems with defective GFM;

Ensure consistency and compatibility of the various Navy QDR systems with each other and with other Department of Defense components.

Finally, and probably most importantly, use the data developed by the QDR systems to hold vendors accountable either by having them take corrective action or by preventing future purchasing from them. If the vendor is a sole source, alternative sources

should be developed if the sole source does not improve the quality of its products.

[Statement of Mr. Connor follows:]

STATEMENT BY MR. HENRY CONNOR, SENIOR ASSOCIATE DIRECTOR
GENERAL ACCOUNTING OFFICE

Mr. Chairman and members of the Subcommittee:

We are pleased to be here today to discuss our work on the problems that the Navy is experiencing because of defective material it furnished to defense contractors.

The Navy provides billions of dollars of Government furnished materials (GFM) to private contractors for use in performing construction, overhaul, and repair contracts. These materials, which are either owned or acquired by various commands, include parts, components assemblies, raw and processed materials, and supplies. They are issued to contractors as part of contractual agreements, to be attached to or incorporated into such end products as ships and aircraft.

The Navy spends millions of dollars each year to repair or replace materials found to be defective after contractors receive them. The responsibility for managing defective materials is highly fragmented among the various Navy systems commands and their subordinate commands. The Navy, therefore, could not provide a total figure for defective GFM, even though a number of reports have been issued on the many problems associated with these materials.

Although several of the systems commands had established quality deficiency reporting systems for accumulating this data, the information generated by these systems has usually been of little help in (1) identifying the magnitude of the problems, (2) obtaining corrective actions, (3) helping to prevent future recurrences of the same problems, or (4) taking action against vendors habitually providing poor products.

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With only limited audit work at eight contractors' locations, we identified about $31.4 million that the Navy either has spent, obligated or estimates it will spend for repairing defective GFM.

The Navy's failure to identify the magnitude of defective GFM and their associated costs has precluded the necessary management oversight needed to correct the problems.

Historically, GFM have been cited as the reason for many contract problems. As early as 1972, GAO identified defective and late delivery of GFM as one of five basic factors causing the Navy increased contract costs. Also, in 1975, GAO reported that the need to repair defective GFM was interrupting shipbuilders' construction schedules and resulting in delays and claims against the Government.

The Naval Audit Service and others have also reported problems associated with defective GFM. For example:

--In June 1977, Naval Audit Service estimated that defective GFM had led to 36,000 maintenance actions annually at a cost of more than $14 million. The report also noted that a number of Navy commands were not negotiating equitable price adjustments for these repairs.

--In May 1978, Naval Audit Service reported that inadequate receipt inspections by a prime contractor had resulted in escalating repair costs because defective GFM were installed in aircraft.

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In 1978 DOD, recognizing the need for a quality information system, issued DOD Directive 4155.1. DOD components were to establish a quality assurance program as a component of the acquisition and support process, and to conduct audits to ensure that quality products and services were obtained.

This directive also established that contractors (1) are to be held responsible for the quality of goods and services they provided, (2) must establish quality control programs, and (3) are responsible for the quality of products and services provided by their subcontractors. DOD components were to establish inspections at the destination point whenever practical and were to ensure that contracts were not awarded to contractors known to provide unsatisfactory products or services.

The Navy is generally not holding vendors accountable for the repair or replacement of defective GFM. The Navy's usual solution is to have the item repaired by the receiving contractor or an on-site product's vendor representative. There was seldom any attempt to go back to the products' vendors to obtain a repair or a replacement or a price adjustment to compensate for the repair costs incurred. For example,

--For seven of the contractors we visited, the Navy paid or obligated over $11 million for the repair of defective GFM over a 30-month period. This figure does not include payments to on-site product vendor representatives for repairs.

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--For the other contractor, the Navy has already expended $6.6 million for GFM repairs on two contracts for the fast frigate ships' combat systems and it estimates that it will spend an additional $13.8 million on these two contracts and a third contract, before the contracts are completed. No actions have been taken against any of the vendors of the defective items. Instead, the Navy has simply paid the contractor to make corrections.

Navy officials told us they do not go back against the vendors because most of the GFM items purchased are inspected and accepted at the vendors' plants by Defense Contract Administration Service representatives. They said the Navy has no recourse against the vendors if the materials are found to be defective later on. They also said the Defense Acquisition Regulations permit solving the problem by paying the receiving contractor to make the repairs.

We did not evaluate source inspections. However, we did review four Navy quality deficiency reporting systems. The Navy systems identified high percentages of defects for which the cause of the deficiency was vendor quality control. These reports showed that many deficiencies resulted because the items were not made according to specifications, poor workmanship, or other quality control factors.

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For example, one report listed numerous manufacturing problems with a missile launcher. The following is a selected list of the things that were wrong.

--Hydraulic pressure for magazine does not meet specifications.

--Latch unit for hoist bound up making hoist inoperable.

--Guide arm and train positioner leaking oil.

--Hydraulic lines chafing and vibrating.

--Magazine blow-out parts leaking anti-icing fluid.

--Train regulator dial face installed improperly.

--Train and elevator brakes operate incorrectly.

--Hand pump mounting bracket missing.

The Navy continues to award contracts to vendors with histories of providing unsatisfactory products. For example,

--In an analysis of 12 Navy contracting activities, the Navy Sea Systems Command identified the award of 675 of 929 contracts--73 percent--to vendors previously identified and reported as having a history of providing poor quality products. Thirty-one of the 54 vendors involved had been on quality deficiency lists for the previous 2 years.

--During a recent 3-month period, the Navy Supply Systems Command awarded 111 contracts to vendors for the same items for which they had a previous record of providing poor quality products.

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Navy Materials Command officials told us they had been trying for 5 years to get the Navy's various systems commands to use the data produced by the quality deficiency reporting systems to at least flag problem vendors and require purchasing officers to review the records before placing any additional contracts. They have been unsuccessful in accomplishing these goals, even though Navy studies have indicated that many of the items in the supply system are defective.

In conclusion, the Navy needs to improve its management of defective GFM to ensure it (1) is meeting DOD requirements, and (2) is effectively managing the problems created by defective GFM.

The Navy has no central point of control or accountability over defective GFM. The QDR systems it has developed are not working and are not monitored to assure the consistency and interface needed to provide management visibility of the scope or magnitude of the Navy's defective GFM problems. Data developed which indicated vendors who habitually provided defective items was not being used effectively.

The Navy was not taking action to make vendors accountable for poor quality products provided as GFM. Generally, the Navy was simply paying the contractor who received the defective item to repair or replace it. This procedure is not only costing the Navy millions each year, it is relieving the producing vendors of their accountability for the quality of products provided.

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Accordingly, we believe the Navy should:

--Bring the Navy QDR systems into agreement with Department of Defense Directive 4155.1.

--Develop a system for maintaining overall financial and logistical data which will provide the management visibility needed to identify the nature and magnitude of the problems with defective GFM.

--Ensure consistency and compatibility of the various Navy QDR systems with each other and with other Department of Defense components.

--Use the data developed by the QDR systems to hold vendors accountable either by having them take corrective action or by preventing future purchasing from them. If the vendor is a sole source, alternative sources should be developed if the sole source does not improve the quality of its products.

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Mr. CONNOR. Mr. Chairman, that is a summarization of my statement. I would be happy to try to answer any questions you may have.

DOD POLICIES AND REGULATION ADDRESSING DEFECTIVE GFM

Mr. ADDABBO. Thank you very much, Mr. Connor.

You mentioned Department of Defense Directive 4155.1. Do you feel this and other DOD directives adequately address these problems?

Mr. CONNOR. Yes, sir, I do.

As I said, in 1978 the Department issued this directive in the recognition there was a need to do something to identify the quality of products being provided by vendors as GFM.

Mr. ADDABBO. If the service followed the DOD guidelines, would they then be able to get a handle on the problem?

Mr. CONNOR. If they followed the guidelines properly, yes, sir. If they accumulate the data necessary to identify problem vendors, they could take action, I believe, to improve the situation. Of course any system is only as good as the information being fed into it. We have found problems with the completeness and accuracy of the quality deficiency reports being submitted so it would have to have command emphasis to improve this as well.

NAVY GUIDELINES ON DEFECTIVE GFM

Mr. ADDABBO. Has the Navy established its own internal guidelines in response to the DOD directives?

Mr. CONNOR. Yes, sir, they have.

Mr. ADDABBO. What is your assessment of the Navy's guidelines?

Mr. CONNOR. We are not too pleased with them. As I mentioned in my statement, they are fragmented. Each systems command established its own implementing guidelines. They were different. They were incompatible. They even had differing goals.

For example, the Sea System Command, I believe, had a similar goal to the Department of Defense directive in that its goal was to identify problem vendors. It was the only systems command that had that as its goal. Other systems commands had other goals such as purging the system of defective material, identifyng problems in the design of items, and so forth.

Mr. ADDABBO. Your draft report states the Navy systems are not providing management visibility over defective material. Could you elaborate on this?

Mr. CONNOR. I would like to ask Ms. Williams, who actually was responsible for his particular audit, to talk to that.

Ms. WILLIAMS. The reason we feel that way is because the four systems do operate differently and for different purposes.

Also, you cannot take the information from the four systems and put them together to come up with any overall information or data on the magnitude of the problem, where the problem is occurring, if there are cross-system problems or any of that type of information.

The input information is coming in in the same type of form but each system has set up the processing to come up with their own end goals.

Therefore, the Navy in total cannot tell what the problem is. You can come up with some of it on a system command basis, but you cannot come up with a total. Even on the systemwide—system command basis, you can only come up with part of the problem because a lot of the information is not being fed into the system from the field.

CONTRACTORS FILING DEFECTIVE GFM REPORTS

Mr. ADDABBO. In your study, did the contractors receiving this government-furnished equipment file defective material reports?

Mr. CONNOR. Yes, sir. We found the contractors were pretty good at filing the defective material reports. The problem was the Navy office responsible for forwarding these to the systems commands were not forwarding them.

I think we have statistics, don't we?

Ms. WILLIAMS. We found, for example, in NAVSEA's contractors we took a look at, they supplied over 9,000 deficiency reports. However, only 405 quality deficiency reports were actually filed by either a SUPSHIP or by a shipyard in recognition of those 9,000.

On the NAVAIR side we found over 5,000 deficiency reports had been filed by the contractors we looked at, but only 1500 QDRs, or quality deficiency reports, had been filed by the Navy officers responsible.

Mr. ADDABBO. This is a real heavy condemnation of the Navy's poor management, which is not new in any case, but has the Navy either formally or informally commented on your draft report?

Mr. CONNOR. They have informally commented. We met with various commands, systems commands. They have generally agreed that they have a problem. In fact, they are—the Navy Material Command is in the process of trying to implement a directive that will pull together all of these system commands QDR reporting systems and goals.

Ms. WILLIAMS. They are also trying to get some actions going on having the field activity submit more reports. They do not feel that this has been effectively done, that somehow the importance of the program etiher has not been emphasized or for some other reason the people are not responding as they wish for them to respond.

Mr. CONNOR. What worries us a bit though is they have been trying to do this for about five years.

Mr. MURTHA. What happens to the report? The contractor submits it. What happens then?

Ms. WILLIAMS. What happens is, the contractor, in the process of building, overhauling, whatever they are doing, will come across a piece of defective materials, either through a bench test, installation testing, or some other way. What they do is fill out a form and notify either the SUPSHIP contract administrator or they notify the NAVPRO, the Navy plant representative located at that site, that they have identified a defect.

The main reason for their doing this is it may hold up their schedules and can possibly result in them being able to file claims against the government. So they don't want to be held responsible for the fact that the government-furnished material was defective. So they will notify the local contracting officer of the problem.

Then it is up to the local contracting officer to notify the various system commands that there was a defect, what type of defect there was, what was involved, and that type of thing. It is up to them.

Mr. MURTHA. You say only 400 out of 9,000 went the extra step?

Ms. WILLIAMS. Yes.

Mr. MURTHA. What does that mean from a practical standpoint?

Ms. WILLIAMS. It means you are not getting very much information.

Mr. MURTHA. Practically what does it mean? What information does the Navy not get at the higher level?

Ms. WILLIAMS. They are not finding out the magnitude of the problem. They are also not finding out ahead of time if one individual is having problems with an item that other individuals may be buying, and that something perhaps ought to be done in the process.

The Navy recently provided some information in addition to what we already developed that showed that DLA continued to purchase items that the Navy knew were defective but, because of the fact the systems were not working properly, these items were continually purchased even though they were continually coming in defective.

Mr. CONNOR. To try to answer what I think you are getting at, the reason only 405 went forward is because a Navy official decided for one reason or the other that it should not be submitted to his command.

Mr. MURTHA. Is there a reason for—say, half of them should have gone forward? In your estimation, what percentage should have gone forward?

Mr. CONNOR. Do you have a feel for that?

Ms. WILLIAMS. We talked to the Navy people about this to try to get a feel. We know, for example, of the 405, some may have covered more than one item. We found the basic problem in filing was, they don't have any incentive to file because most of the time they have solved the problem by the time they fill out the report. They can't stop a production line, they can't stop a repair, they must go in immediately and deal with the problem. So the immediate solution is to pay the contractor or an on-site vendor representative to fix the item right then.

Then when they file the report, they don't get any benefit from it. They don't see any tangible benefit.

Mr. CONNOR. Plus I think we found a general feeling on the part of these Navy officials that nothing could be done to the vendor anyway. They had interpreted the defense acquisition regulations as saying that once that item had been accepted at origin, that the government, the Navy could not go back against that vendor to make it good. So they felt it was useless to file that QDR.

Mr. MURTHA. It seems like it is useless.

Mr. CONNOR. We don't feel that way. If they had filed the QDR and management could have accumulated and identified flagrant problem vendors, they could have taken some action. They could have not awarded a follow-on contract, for one thing, to them.

Mr. MURTHA. With the chairman's indulgence, if I can ask a practical question.

On the TRIDENT, if I remember, there were a couple of turbines which involved a very difficult installation; then there was all kinds of other equipment put around it. They tested the turbines and found out they were defective. They had to take all the equipment out and finally take the turbine out, replace it.

Now in a case like that, what should have happened and do you have any idea what did happen?

Mr. CONNOR. I cannot speak to that particular case, but I do know, and I think Priscilla mentioned it, what does happen is that that contract administrator wants to get that ship overhauled and out, so he has that—he is not going to hold up the overhaul of that ship or aircraft or whatever awaiting someone to ship that defective part back to the vendor and get a replacement. So he says, fix it and put it on the ship, lets get that ship out.

In most cases, it probably is the most cost-effective thing to do.

Mr. MURTHA. So you are saying the vendor himself bore the burden of the changes and then the Navy just paid for it usually rather than go back to the contractor and so forth?

Mr. CONNOR. That is right.

Mr. MURTHA. If the report stopped there, the Navy is going to pay for it anyway, so there is no sense in sending the report on forward?

Mr. CONNOR. That is the feeling of most of the local level officials, yes, sir.

Mr. MURTHA. What are you recommending? To have an incentive to send them forward and have the contractor take care of them?

Mr. CONNOR. I think if action was taken against contractors who are habitually providing defective quality material and these local officials see something was done with these quality deficiency reports, that they would be submitted.

GAO CONCLUSIONS

Mr. ADDABBO. Mr. Connor, in our shipbuilding hearing, the committee questioned the Navy with respect to your report relative to Navy officials being unsuccessful in discontinuing the purchasing of equipment from vendors who habitually supplied defective material. The Navy witness stated that they believe those conclusions were suspect. How do you respond to that?

Mr. CONNOR. Our conclusions, we feel, are well-supported in our draft report. We have exited with all of the systems commands and Navy Material Command, and they have agreed with our conclusions.

Ms. WILLIAMS. We also met with DOD officials. They agreed the problem was there.

Mr. ADDABBO. I agree your numbers belie their statement.

The gentleman from Alabama?

IMPACT OF DEFENSE ACQUISITION REGULATIONS

Mr. EDWARDS. Thank you, Mr. Chairman.

I find this whole thing rather incredible that something like this can go on. It looks to me like you have done a good piece of work.

I am intrigued by the fact that the Navy, according to you, on page four, says that they have no recourse against the vendors if

the materials are found to be defective later on. They also said the defense acquisition regulations permit solving the problem by paying the receiving contractor to make the repairs.

Don't you find that a little incredible that that would be in the regulations that way?

Mr. CONNOR. I find it incredible, however, as the defense acquisition regulation is currently written, I can understand why some Navy officials feel this to be true, because, as it is currently written, it says once the item has been accepted at origin, which generally means accepted by the defense contract administration's quality assurance people at the contractor's plant, there is very little recourse that the government has in order to come back to that contractor to have that item repaired or replaced.

Mr. EDWARDS. It is like the turbines that Mr. Murtha was talking about. They were accepted; they were put in the TRIDENT; later they were found to be defective.

You are saying that under the regulations the Navy is deemed to have accepted and therefore waived any further right against the vendor?

Mr. CONNOR. Yes, sir. I also must say though that the defense acquisition regulations are in the process of being changed.

Mr. EDWARDS. As a result of your work or prior to your work?

Mr. CONNOR. We would like to think——

Ms. WILLIAMS. We would like to think it is a result of our work.

Ms. EDWARDS. What is the fact?

Ms. WILLIAM. We recommended the change and they turned it down before our report was issued in draft. They decided just a few weeks ago that they would issue part of the DOD Regulation 4155.1 as part of the defense acquisition regulations.

What they have done in essence is allow the Navy and other DOD components to deny contracts to vendors who habitually provide defective items. They did not do that before.

They had a great deal of difficulty using their deficiency reporting systems because of that, as an example of problems they are having.

Mr. EDWARDS. So you feel as though you scored there?

Ms. WILLIAMS. We think so.

Mr. EDWARDS. Does that mean what they are really doing is upgrading their computer system so these contractors stand out and are flagged when they are getting ready to let some contracts?

Ms. WILLIAMS. The systems, as they had them before, could be used to flag the contractors, but it was not being used that way because they didn't feel that they really had the teeth in the regulation to go back against them.

The regulation did not include the option for them to say you can use their past record in denying them a contract and say that they cannot satisfy your satisfactory performance part of the DAR. They can now say that.

It was not used before. Before, when they wanted to go back against the contractor, they had to prove latent defector fraud.

TERMINATING BUSINESS WITH POOR VENDORS

Mr. EDWARDS. It is not a body of law that I have delved in as a lawyer since years and years and years ago, but it would seem to me just trying to fit it in a practical businesslike standpoint that if General Motors were buying engines from somebody to go into their pick-up trucks, and they got a lot of them on the dock and started putting them in the trucks and when brought off the line, they weren't working, it would seem to me they would have a great case against whoever the engine manufacturer is.

I don't understand why the Navy wouldn't have a similar kind of recourse.

Mr. CONNOR. I understand what you are saying, sir. If I were General Motors, I could quit dealing with a vendor just like that. The Navy and the government have a little more difficulty.

Art Metals Inc. and GSA is a perfect example. GSA wanted to quit doing business with Art Metals. Art Metals took them to court. They had a very difficult time.

In fact, I don't think they were able to.

Mr. HELMER. I think they eventually were, but it was quite a trial and tribulation.

Mr. EDWARDS. Is that Art Metals?

Mr. HELMER. Yes. It is a company that produced a lot of furniture for the General Services Administration and produced a lot of shoddy material over the years.

Mr. MCDADE. In the hypothetical case about the engines, you would have a couple of choices, if you were GM? You could sue. Why can't the Navy sue?

Why can't they go back? Is that because of the regulation that says once they accept it——

Mr. CONNOR. Yes, sir.

Mr. MCDADE. Do they sign off when they accept it?

Mr. CONNOR. Yes.

Mr. MCDADE. Is that procedure changed?

Mr. CONNOR. It is in the process of being changed.

Mr. MCDADE. Because of the report you filed?

Ms. WILLIAMS. We can't say it was because of the report.

Mr. CONNOR. It was being considered for some time.

Mr. MCDADE. What would the Navy's option be under that same hypothetical case? Stop doing business? Could they sue for recourse?

Ms. WILLIAMS. They will now have the option of stopping business without these people. That is all. That is the diference. In the past they did not have that option. They will have the option of saying, we won't do business with you any more.

Mr. MCDADE. Shouldn't they have the option to sue?

Mr. CONNOR. Well, are you talking about a warranty-type situation?

Mr. MCDADE. Sure. Yes. Fitness for the purpose, general warranty.

Mr. CONNOR. This has been debated over the years. I am not an expert at this, because I am not a procurement expert, but as I recall what happened was that the government said, we are a self-

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insurer and therefore we don't want to pay the price in the end item for a warranty. So they have done without warranties.

Mr. HELMER. They have done without warranties as a separate type of an item because they found that they were spending millions of dollars for warranties and when they found out an item was defective, they would go back and try to exercise a warranty, and they found it had already expired.

They were wasting their money. They generally quit the warranty business.

Mr. EDWARDS. Uncle Sam is pretty easy.

Mr. ADDABBO. Mr. Murtha, any further questions?

INSURANCE COVERAGE

Mr. MURTHA. One other problem regarding insurance covering these defects. For instance, this one outfit tried to sue the government because they couldn't carry insurance for defective management covering these defective parts.

Did you run into any of that type of thing in your investigation?

Mr. CONNOR. No.

Ms. WILLIAMS. We have heard the same thing you just talked about, but we did not get into it.

Mr. MURTHA. It was so presumptuous that they would try to do that. They finally worked it out.

Ms. WILLIAMS. We were told by officials that this had happened, they tried to run that in on the contract prices to cover themselves.

We didn't investigate it any further.

Mr. MURTHA. That is all I have, Mr. Chairman.

ACCOUNTABILITY FOR DEFECTIVE MATERIEL

Mr. ADDABBO. In the course of your study, did you determine whether the Navy was actually holding the vendors responsible for the quality of their products and if this wasn't being done, is that being possibly changed in the new regulation that may come out one of these days?

Mr. CONNOR. We found that it was not being done. Currently we think there are two actions that should improve the situation.

One, as we mentioned, the change in the defense acquisition regulation which permits the government to discontinue doing business with a contractor who habitually provides defective material.

We also found the Navy material command is in the process of trying to implement a regulation which will pool all the systems commands quality deficiency reporting systems together so that they will have one Navy quality deficiency reporting system. That we think will significantly improve the Navy's ability to deal with the contractors.

Mr. ADDABBO. In your opinion—this may be far afield from your expertise—can this be accomplished simply by contract negotiations or must there be DOD directives, Navy directives, and/or legislation that would give them the power to go after the vendor after acceptance?

Mr. CONNOR. I think if the defense acquisition regulation is changed, if the Navy gets their quality deficiency reporting systems pulled together into one total Navy system, if sufficient command

emphasis is given at the local level to have these quality deficiency reports filled out completely and accurately, the Navy will go a long way to improving this deficient material situation.

Mr. ADDABBO. Mr. Connor, could you give the committee a ballpark figure what this problem has cost?

Mr. CONNOR. As we mention in our statement, in looking at just eight contracts, we identified $31.4 million of repair costs incurred.

Based on that and based on the number of quality deficiency reports we have seen in our review, we think it is in the hundreds of millions of dollars.

Mr. ADDABBO. In your extensive review of all their records and reporting, were you able to or can you supply the committee with a list of those contractors who had on more than three occasions, say, delivered defective equipment?

Mr. CONNOR. We did not compile this. We have it from the Navy records. I don't know that—we have it for the Naval Sea Systems Command.

Mr. ADDABBO. Whatever records you have, can you give the committee?

Mr. CONNOR. We could supply that for the record.

[CLERK'S NOTE.—The information was provided for the committee's files.]

Mr. ADDABBO. Thank you very much. We have other questions to submit for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Addabbo and the answers thereto follow:]

SCOPE OF WORK

Question. How long have you been working on this particular project?

Answer. We have been working on this particular project about 1 year. This project is part of a series of jobs concerning DOD's management of Government Furnished Materials. The first review involved the management of GFM by Navy Supervisors of Shipbuilding Conversion and Repair. The second review was an overview of DOD's accountability of the Government property in the hands of contractors.

The current job was primarily the result of information developed during the review of SUPSHIPs.

In total, we have been working in the area for about 2½ years.

Question. In conducting your review, did you examine the practices of any other service besides the Navy, and if not, why did you focus your attention solely on the Navy?

Answer. Not. We reviewed only the Navy. We focused our attention on the Navy because of information developed during the review of SUPSHIPS. We considered doing a cross-service review, but the effort would have been very long and extensive to adequately cover each service.

Question. Do you plan to conduct a separate review for each of the other services?

Answer. Not at this time. There are several efforts underway by the Army. The Defense Audit Service and the service IG's in con-

nection with the President's Council on Integrity and Efficiency in Government are evaluating the entire GFM management area.

Question. How many contractors were included in your review?

Answer. Eight. We originally included nine contractors in our review. Six of the contractors were selected based on getting a cross section of Navy commands known (1) to deal in large amounts of GFM—NAVSEA and NAVAIR—and (2) a variety of types of contracts—new construction and overhaul and repair. The other three were selected because they were involved in an experimental program which had as one of its purposes the reduction of defective GFM furnished to contractors.

One contractor was eliminated after selection because we found it did not deal in large quantities of GFM. Therefore, the detailed review was conducted at eight contractors.

EXAMPLES OF GOVERNMENT FURNISHED EQUIPMENT THAT WERE FOUND TO BE DEFECTIVE

Question. When you talk about government furnished materials, just exactly what types of items are we talking about—can you give us a few examples?

Answer. GFM includes parts, components, assemblies, raw and processed materials, and supplies that are attached to or incorporated into end products such as ships and aircraft. The material are either owned or acquired by various commands and are issued to contractors as part of the contractual agreement.

Examples of GFM would include things from bolts and valves made especially for Government applications to such things as missile launchers and nuclear reactor power plants.

Question. Were you able to estimate what the Navy spends annually for GFM?

Answer. No. The Navy does not maintain records showing this overall data nor were they able to provide an accurate figure. On May 7, 1982 they estimated that as of September 30, 1980, there were approximately $6.2 billion of Government owned materials involved in Navy contracts. The Navy had previously submited a figure of $3.4 billion to another subcommittee.

Question. Your report mentions that the Navy estimates that it will spend an additional $13.8 million with one of the contractors for repairs of GFM for the FFG–7's. Could you elaborate on this example for the committee?

Answer. This estimate is for GFM repairs for FFG–7 ships remaining to be built.

Land based test facilities are part of an experimental effort by the Navy to test and assemble combat systems and their components, before they are delivered to the FFG–7 ship construction contractors. The work performed by the land based test facility includes the installation of field change kits, testing the system components to assure they are compatible, and functional in simulated tests, and making system or component repairs as needed.

One goal of the test center was to reduce the amount of defective GFM going into shipyards.

Thus far the Navy has awarded contracts for $109.6 million for the test center contracts. As of December 31, 1981 the Navy had

spent $6.6 million at the test center for GFM repairs and estimated it would spend the additional $13.8 million to repair other GFM through October 30, 1985.

Question. Are there any other examples you feel are worth mentioning?

Answer. None besides those mentioned in the testimony.

Question. Can you or would you characterize these examples as isolated incidents?

Answer. In our opinion, these are not isolated examples, but common occurrences.

COSTS ASSOCIATED WITH DEFECTIVE EQUIPMENT

Question. In the course of your study, were you able to determine how much defective GFM is coming into the system? Are we talking about millions of dollars, or hundreds of millions?

Answer. As noted in my statement there are no overall statistics available with which to determine this. Navy officials have estimated based on data they have received on various types of supply items that as much as ⅓ of the items coming into the supply system are defective. Therefore, based on this estimate we are probably talking about hundreds of millions of dollars.

Question. Once a piece of GFM is found to be defective, what happens next—is it repaired or just replaced?

Answer. Generally, the GFM is repaired by the receiving contractor if that contractor has the expertise in-house to do so. If not, the item may be repaired by an on-site vendor representative at Government expense. For lower value production GFM, the item may simply be replaced.

Question. Were you able to determine how much is being spent repairing defective equipment?

Answer. No. As noted in my statement, the systems established to compile this information are not working.

Question. How does the Navy fund the repair or replacement of defective GFM? Does it come from the procurement appropriations?

Answer. Repairs are usually funded through contract change orders. They may also be funded by contracts with the vendors or others. Replacement is funded through the normal purchasing or requisitioning process. Procurement funds are used for repairable items and operations and maintenance funds are used for consumable items.

Question. This would obviously increase the costs of doing business. Were you able to determine the overall effect this has on the contracts you reviewed?

Answer. As noted in my statement we were able in some cases to identify the cost to repair defective GFM. The figures we developed were from contract change orders. We were not able to do this for all contracts because it was not specifically broken out in some of the change orders.

We were able to identify $11.0 million paid or obligated for GFM repairs incurred on major construction or repair contracts with 7 contractors for the 30-month period ending June 30, 1981.

We also identified $6.6 million paid for repairs under two contracts for the FFG-7 ships combat systems from February 1977 through November 1981. The initial estimate for the repairs under the two contracts was $4 million. The current estimate is $14.6 million.

Defective GFM also increases the cost of doing business due to delays in getting the job done or ships built. However, we were able to determine these costs.

DOD POLICY AND REGULATIONS

Question. Can you comment on whether the Department of Defense has adequate policies or guidelines that would address the defective GFM problem?

Answer. In 1978 DOD recognized there were problems in the area of quality assurance and issued DOD Directive 4155.1 to try to get better control over the quality of goods and services purchased by their components. Each of the services issued implementing guidelines for fulfilling the Directive's requirements.

However, the Directive contained more stringent requirements on holding vendors accountable for the quality of goods and services provided than did the Defense Acquisition Regulations (DAR). Therefore, many contracting officers were reluctant to enforce the Directive stating the DAR took precedence.

Recently, however, the DAR Council approved the incorporation of more stringent quality assurance requirements into the DAR. This inclusion appears to bring the Directive and DAR into very close agreement and allows DOD components more latitude in holding vendors accountable for the quality of goods and services provided.

Question. If the DOD guidelines were properly followed, would they be able to get a handle on the problem?

Answer. If there is coordination and control to (1) assure the guidelines are interpreted and implemented the same way by all components, (2) the data collected and produced by the quality deficiency reporting system are compatible, (3) all data needed is reported by the field components, and (4) that the data is used as intended by DOD Directive 4155.1.

Question. Has the Navy established its own internal guidelines in reponse to the DOD directives?

Answer. Yes. The Secretary of the Navy issued instructions to implement DOD Directive 4155.1 within the Navy. NAVMAT issued overall policy guidance to the Naval Systems Commands. In addition, the individual Systems Commands issued directives on how these other directives were to be implemented within their commands.

Question. If so what was your assessment of the Navy's guidelines? Will it get the job done?

Answer. No. As noted in my statement, the reporting systems established to fulfill the guidelines are all operating differently and have different basic goals even though they are similar in the types of data gathered. The systems are not compatible nor do they interface to enable the production of overall Navy data.

There is no central point of control to assure the guidelines are interpreted and applied the same by each of the systems commands. Therefore, they are not.

This fragmentation prevents the accomplishment of the guidelines in providing management visibility of the problems on a Navy wide basis. It has also precluded the interface and compatibility needed with other DOD components.

Question. Overall, do you believe if the Navy's policies and regulations were properly implemented, they could identify the overall magnitude of the defective GFM problem?

Answer. No. The problems of inconsistency between the various implementing instructions and resulting systems and the problems in inaccurate reports and under reporting would have to be eliminated before the overall magnitude could be determined.

INTERNAL AUDITS BY DOD

Question. In conducting your study, was there any evidence obtained that showed the internal audit agencies within the Department of Defense had also raised questions with respect to the defective material issue?

Answer. At the time of our review, Defense Audit Service officials told us they had not issued any reports dealing with the problems of defective GFM. However, they currently have a major review of the entire GFM management area under review in coordination with the President's Council on Integrity and Efficiency in Government.

The Department of Defense also has recently conducted an audit involving defective material management. For example, the Defense Audit Service recently sent a proposed draft report titled "Reliability of GFM Required by DOD Instruction 5000.40" (Project 2AD-007) for service comments. They expect the final report to be issued in about a month.

The scope of this audit was to ascertain whether GFM to be incorporated into major systems met contractual specifications. The inquiry was initiated after the Audit Service noted GFM was being rejected by a contractor at a rate which raised questions regarding quality assurance procedures. In summary, the Audit Service found:

That 30 percent of the Harpoon missile engines were being rejected, due to quality assurance weaknesses and/or inadequate design.

There was excessive maintenance on new Air Force F-100 engines: 27 of 64 new engines received were being repaired or waiting spare parts.

A high rejection rate of the Army's Black Hawk helicopter electronic items provided to the prime contractor for installation. In one case, the Government inspector was not aware the prime contractor was rejecting the items.

As noted in our testimony the Naval Audit Service has issued several reports which pointed out problems with defective GFM and a Navy Inspector General report also had identified problems. Additionally, the Navy Material Command issued a report on the Navy's quality deficiency reporting systems.

Naval Audit Service reports cited problems in the large numbers of maintenance actions resulting from defective GFM and the inequitable price adjustments negotiated by some commands for repairs, and that inadequate receipt inspections had resulted in installing defective items in aircraft.

The Navy Inspector General reports cited delays in ship availabilities and claims against the Government resulting from nonconforming materials.

The Naval Material Command reported that:

Navy quality deficiency reporting systems did not interface with each other or with other DOD components;

There was no overall management visibility over the scope of the quality deficiency reporting system, the functions performed, the resources assigned, or the measures of effectiveness;

The lack of management visibility and central coordination over the systems resulted in under utilized or misdirected use of system capability.

Moreover, these problems still exist.

Question. Were you able to determine whether the Navy has followed up on the reports issued?

Answer. According to Naval Audit officials they did not routinely do follow-ups to their reports at the time the two reports involving defective GFM were issued. They said they have recently instituted a policy change which will provide for automatic follow-up on future reports.

According to the Assistant NAVSEA IG, the NAVSEA IG office followed up on their report 1 year after it was issued in May 1980. Because all of the recommendations had not been fully implemented or corrections made they continued to monitor the situation until changes were instituted. He also said it was standard procedure to follow-up on each report issued 1 year after issuance.

RESPONSIBILITY AND ACCOUNTABILITY OF DEFECTIVE GFM

Question. Does the Department of Defense have adequate policies and guidelines with regard to the Government's right to recourse in a case involving defective GFM?

Answer. Recently the DAR Committee approved the inclusion of more stringent quality control procedures in the Defense Acquisition Regulations. These requirements should allow the Government more latitude in ensuring the quality of goods and services received and in the actions that can be taken in regard to vendors habitually providing poor quality items.

Coupled with DOD Directive 4155.1, these requirements, if effectively carried out, should provide the Government more adequate recourse in solving the problems of defective GFM.

Question. Is there a central point of control or accountability over defective GFM? Do you believe it is necessary and if so, tell us why?

Answer. There is currently no central point of control over defective GFM. There are DOD requirements for cross-service reporting of certain categories of items, but this process does not appear to be effective.

For example, DOD Directive 4155.1 requires that the services establish methods for reporting defective materials among themselves to insure visibility over the items so that the necessary corrective actions can be taken. This is especially important where one service may be buying the items and furnishing them to another service or services. However, we doubt that there is effective cross-service reporting of defective items, because the Navy's internal reporting is too deficient to allow accurate reporting elsewhere.

The Navy data being reported is questionable based on our review of the Navy systems for gathering the input data. Although we did not do a detailed review of the data reported cross-service we found little apparent use made of the data at least within the Navy.

A central point of control at least for cross-service items would provide data to all services on the problems being experienced, the magnitude of the problems, corrective actions that can be taken, etc. It could also help prevent the continued purchase of items from vendors who do not take corrective action to bring the quality of their products into line with requirements.

Question. In the course of your study did you determine whether the Navy was actually holding vendors responsible for the quality of their products and if not, explain why this was not being done.

Answer. The Navy generally was not holding vendors responsible for the repair or replacement of defective GFM. The solution usually taken by the SUPSHIPs and the NAVPROs visited was to have the item repaired at Government expense by the receiving contractor or an on-site vendor representative. There was seldom any attempt to go back to the product's vendor to obtain a repair or replacement, or a price adjustment to compensate the Government for the repair costs incurred. This management philosophy results in vendors not being held accountable for the quality of products they provide as well as increased contract costs in the millions each year.

Navy officials told us they do not go back against the vendors because most of the items purchased are inspected and accepted at the vendors' plant by Defense Contract Administration Service representatives. They said the Navy has no recourse against the vendors if the materials are found to be defective later on. They further said they believed most of the defective GFM problems they are experiencing are due to the inadequacy of these source inspections.

Question. Did you find the Navy continued to award contracts to vendors with a history of providing unsatisfactory products?

Answer. Yes. The Navy is awarding contracts to vendors with a previous history of providing products of an unsatisfactory quality. If quality input data is received, the reporting systems can produce data which will adequately document item defects and flag those vendors who are providing defective items. However, even the information currently being produced is often ignored by Navy contracting officers. For example:

In an October 1981 analysis of 12 Navy contracting activities, NAVSEA identified the award of 675 of 929 contracts—73 percent—to vendors previously identified and reported as having a his-

tory of providing poor quality products. Thirty-one of the 54 vendors had been on quality deficiency lists for the previous 2 years.

During a recent 3-month period, NAVSUP awarded 111 contracts to vendors for the same items for which those vendors had a previous record of providing poor quality products.

Question. If so, did you find that this was a standard operating procedure or just a few isolated incidents?

Answer. We believe based on our review this situation represents more than just a few isolated incidents because of the number of times it has occurred in just the few examples we documented. However, we do not know the magnitude of the problem as this information is not routinely maintained.

Question. Again, during the course of your review, were you able to determine whether there were any attempts by the Department to discontinue work with vendors who consistently provided defective GFM?

Answer. No. Navy officials told us they have tried to discontinue dealing with some vendors. However, they said the process is so long and complicated it has been practically impossible to eliminate vendors with poor performance records. They were not able to provide any specific examples of vendors with whom they had discontinued doing business because of poor quality items provided.

NAVY COMMENTS ON THE DRAFT REPORT

Question. Has the Navy either formally or informally commented on your report?

Answer. The Navy has commented informally on the report. Formal comments should be received on August 6.

Question. During the course of our shipbuilding hearings, the committee questioned the Navy with respect to your report of naval officials being unsuccessful in discontinuing the purchasing of equipment from vendors who habitually supply defective material. The Navy witness stated they believe those conclusions were suspect. How do you respond to that?

Answer. The conclusions were based on review work at a number of naval commands including the major quality deficiency reporting systems. We discussed the results of our audit findings at length with cognizant Navy officials. These officials agreed with our conclusions on the problems of continuing to purchase from vendors with a history of providing defective GFM. The reasons they cited for these purchases included:

The vendor may be a sole source;

Small Business Administration requirements make it very difficult to prevent purchasing from small business previously certified by SBA;

It is difficult to hold a vendor responsible for the quality of an item once Government has inspected and accepted it because of the Defense Acquisition Regulations.

REPORTING SYSTEMS TO ADDRESS PROBLEM

Question. Your draft report states that the Navy's systems are not providing management visibility over defective material. Could you elaborate on this?

Answer. The Navy has no central point of control or accountability over defective GFM. Instead, its management is fragmented among the various Systems Commands, which have developed their own reporting systems. These systems are not monitored to assure the consistency and interface needed to provide management visibility of the scope or magnitude of the Navy's defective GFM problems. And, although the basic regulations and directives for managing a quality assurance program are the same, they were not interpreted and applied in the same manner.

All of the systems were experiencing problems with (1) underreporting of defective GFM and (2) the submission of inaccurate data on the Quality Deficiency Reports. These problems result in a lack of assurance that the information produced by the systems is reliable for making management decisions or taking action to solve the problems.

Neither we nor the Navy know how much it is spending to replace or repair defective GFM because these systems do not identify the costs. The Navy's failure to identify the magnitude of defective GFM, and its associated costs for repair or replacement has precluded the management oversight needed to take effective action to correct the problems.

Question. You also point out that the Navy system does not identify the magnitude of the defective material problem. Why do you believe the system fails in this regard?

Answer. All of the systems were experiencing problems with (1) underreporting by field activities and (2) incomplete or inaccurate data in reports that were submitted. Additionally, the systems are not compatible and therefore cannot be used to develop overall data.

Question. In the course of your study, did you find that the contractors receiving this Government furnished equipment were filing defective material reports?

Answer. The contractors are not responsible for filing the defective material reports for the quality deficiency reporting systems. These reports are filed by the Navy quality assurance representatives who are administering the contracts. Contractors are responsible for notifying the Navy representatives of the problems.

We found that generally the contractors were effective in notifying the Navy representatives of the problems of defective GFM. However, the Navy representatives were not reporting the defects as required to their respective quality deficiency reporting systems. For example:

For the five NAVSEA representatives contacted, selected contractors had filed over 9,000 reports involving defective GFM. But the SUPSHIPs/Shipyard filed only a total of 405 quality deficiency reports with NAVSEA's quality deficiency reporting system.

For the two NAVAIR plant representatives contacted over 7,000 reports were filed by contractors but less than 1,500 reports were filed with NAVAIR's quality deficiency reporting system.

Question. Were these incidents being reported to the Naval Sea Systems Commmand?

Answer. As noted, only 405 quality deficiency parts were filed for over 9,000 incidents reported by contractors.

Question. Does NAVSEA require reports of this nature?

Answer. Yes. NAVSEA requires its shore activities to report unsatisfactory material problems for screening, analysis, and action to prevent recurrences.

Question. Did you find any rationale for not submitting these reports?

Answer. Navy officials cited various reasons for the underreporting of defective items.

Users have no incentive to file the reports. They have usually solved the immediate problem caused by the defect through repair of replacement of the item before a report is required.

Reporting activities are confused as to what they should report. Most of these activities have implemented local instructions which specify what should be reported, but these are not reviewed to ensure that all activities are reporting vital, comparable data.

The systems provide solutions or corrections too slowly.

Question. What is the magnitude of defects not being reported?

Answer. We do not know, nor does the Navy know the defects not reported. There is no information available with which to develop such data.

Question. Earlier, you mentioned the policy of the Naval Sea System Command. Do the same problems exist within Naval Air Systems Command or the Naval Electronics Command?

Answer. Yes. The same problems exist within the Naval Air Systems Command and the Naval Electronics System Command as well as, the Naval Supply Systems Command.

Question. What do you see as the overall impact of this with respect to the Navy's inability to get a handle on this issue?

Answer. They cannot solve the problems of defective GFM if they don't know what they are, what is causing them, or what is necessary to correct and reduce the number of occurrences.

GAO RECOMMENDATIONS

Question. Now after all this work, what actions do you recommend the Department take to correct this problem?

Answer. We recommend the Navy:

Bring the Navy reporting systems into agreement with Department of Defense Directive 4155.1.

Develop a system for maintaining overall financial and logistical data which will provide the management visibility needed to identify the nature and magnitude of the problems with defective GFM.

Ensure consistency and compatibility of the various Navy reporting systems with each other and with other Department of Defense components.

Use the data developed by the reporting systems to hold vendors accountable either by having them take corrective action or by preventing future purchasing from them. If the vendor is a sole source, alternative sources should be developed if the sole source does not improve the quality of its products.

Question. Will you be doing follow-up work to see if your recommendations are being followed, and if so, when will this take place.

Answer. Yes. We have standard follow-up procedures for recommendations in our report. We will follow-up initially at 3 months.

Then we follow-up every 3 months thereafter until we are assured the necessary action has been taken.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

Mr. ADDABBO. Thank you very much.

The committee stands in recess until hopefully 1 o'clock tomorrow.

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WEDNESDAY, JULY 28, 1982.

STRATEGIC MANNED BOMBER AND RELATED WEAPONS

WITNESSES

RICHARD DE LAUER, UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING

MAJ. GEN. ROBERT D. RUSS, USAF, DIRECTOR OF OPERATIONAL REQUIREMENTS, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, HQS, USAF

COL. JAMES W. EVATT, USAF, SPECIAL ASSISTANT FOR B-1B, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, HQS, USAF

COL. PAUL G. KAMINSKI, USAF, SPECIAL ASSISTANT FOR LOW OBSERVABLES TECHNOLOGY, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, HQS, USAF

T. K. JONES, DEPUTY SECRETARY OF DEFENSE FOR STRATEGIC PROGRAMS, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING

INTRODUCTORY COMMENTS

Mr. ADDABBO. This afternoon the committee will conduct hearings on the B-1B bomber and other strategic programs of the Air Force. The hearings will be closed, and at an appropriate time we will switch to "special access" since we will be discussing highly classified programs later in the hearing.

The committee plans on discussing various issues including: The credibility of the Air Force's cost estimates for the B-1B;

What items for the B-1B bomber are not included in the Air Force's cost estimate;

The committee will be interested in the views of the witnesses on CBO's estimate that OSD's Independent Cost Estimate for the B-1 is $41 billion, or $410 million per plane, measured in "then-year" dollars.

Also, the committee will discuss the question of how the Air Force can proceed at its planned rate of procurement and/or development for so many high cost systems, M-X, B-1, Advanced Technology Bomber, ALCMs, C-5s, large buys of F-15s and F-16s, at a time when the fiscal years 1983-1985 level for defense spending is scaled back by over $30 billion in budget outlays by the recently passed concurrent budget resolution which is supported by the Administration.

The committee welcomes the Honorable Richard DeLauer, Under Secretary of Defense for Research and Engineering; Lt. General Lawerence A. Skantze, Deputy Chief of Staff of the Air Force for Research, Development and Acquisition; Colonel James W. Evatt, Special Assistant for B-1B, Deputy Chief of Staff of the Air Force for Research, Development and Acquisition, and Colonel Paul G.

Kaminski, Special Assistant for Low Observables Technology, Deputy Chief of Staff of the Air Force for Research, Development and Acquisition.

The Chair at this time recognizes the gentleman from Pennsylvania for the purpose of making a motion.

Mr. MURTHA. Mr. Chairman, I move the hearing on this afternoon on the Strategic Manned Bomber be held in executive session because of the classification of the material to be discussed.

In addition, I move the transcript and related material developed in the special access portion of the hearings be handled in accordance with the Appropriations Committee's special interim procedures for the protection of intelligence information.

Mr. ADDABBO. Under the rules, a roll call is required. The Clerk will call the roll.

Mr. DICKS. Mr. Chairman?

Mr. ADDABBO. Mr. Dicks?

Mr. DICKS. Why does this have to be closed?

Mr. ADDABBO. Because of the nature of the information.

Actually the first part, if we wanted, could have been open. We will be going into certain classified information about the B-1B. Rather than open and close, we have kept it closed, and the room has been secured; otherwise we couldn't hold the special access hearing.

Mr. DICKS. I understand that. It just seems to me this issue is of such significance that there ought to be at some point a public hearing in which the GAO report is aired publicly. I think it raises a very substantial issue of credibility. I think it is something that the public has a right to fully understand and to hear the answers of the Administration witnesses and the Air Force.

Mr. ADDABBO. If the gentleman wishes, I will direct the staff to ensure that the B-1B testimony and answers to the GAO report are printed, with classified matter removed as a public record.

Mr. DICKS. I would appreciate that. Thank you, Mr. Chairman.

Mr. PLASHAL. Mr. Addabbo.

Mr. ADDABBO. Aye.

Mr. PLASHAL. Mr. Chappelle.

[No response.]

Mr. PLASHAL. Mr. Murtha.

Mr. MURTHA. Aye.

Mr. PLASHAL. Mr. Dicks.

Mr. DICKS. Aye.

Mr. PLASHAL. Mr. Wilson.

[No response.]

Mr. PLASHAL. Mr. Hefner.

Mr. HEFNER. Aye.

Mr. PLASHAL. Mr. Ginn.

[No response.]

Mr. PLASHAL. Mr. Whitten.

[No response.]

Mr. PLASHAL. Mr. Edwards.

Mr. EDWARDS. Aye.

Mr. PLASHAL. Mr. Robinson.

Mr. ROBINSON. Aye.

Mr. PLASHAL. Mr. McDade.

Mr. McDADE. Aye.
Mr. PLASHAL. Mr. Young.
[No response.]
Mr. PLASHAL. Mr. Conte.
[No response.]
Mr. ADDABBO. The hearing is closed.
Dr. DeLauer?

STATEMENT OF DR. DE LAUER

Mr. DELAUER. Mr. Chairman, first I would like to say Major General Russ is sitting in for Lt. General Skantze who is in the transition from Wright Field to the Pentagon. As you know, he is taking Lt. General Burke's job on the staff. He will be sitting with me in the future, but today we have Major General Russ. Mr. Jones is my Deputy for Strategic Systems.

I have a short statement to make, I have submitted it for the record primarily to set the scene. I think you are more interested in having me respond to your questions than just a formal statement. Let me get on with it.

There is no question I am very happy with the opportunity to testify today on the bomber modernization program. It is the very heart of the President's strategic modernization program and we think we have a good, a well integrated program, one that we are confident we can implement.

So I will be covering that part of the strategic modernization, the B-1B, a small amount on the air-launched cruise missile program as it affects strategic programs, and then the other strategic support programs that bear on the bomber program, and then the advanced technology bomber will be covered in general terms in my statement and we will leave that to the later session, which will be even more restricted.

I testified before you last year and again this year that improving the bomber force is an extremely vital part of the strategic modernization program. The Congress, after due deliberation last year, directed us to produce and deploy 100 B-1B bombers, to continue research and development, and deployment of an advanced technology bomber and, in addition, authorized and funded continued deployment of the air-launch cruise missile, the ALCM, modifications to the B-52 and modernization of our air refueling capability. with these directions and the funds you supplied, we are well into that modernization program. We intend to pursue this improvement program in three overlapping phases.

The first will complete the air-launched cruise missile and the B-52 modernization programs. Units of the first squadron are now being delivered on schedule and they will be alert capable later this year.

We intend to deploy a large number of cruise missiles during this decade, and they will pose a serious air defense problem for the Soviet Union.

The second or mid-term phase of the bomber program is deployment of a B-1B. The aging of the B-52 force makes it imperative that we provide the B-1B to be deployed as rapidly as possible to provide a penetratability capability to the bomber force, and we

intend to meet our commitment of having one squadron operationally capable in 1986 and 100 bombers delivered by 1988.

We will do this within the stated dollar objective of 20.5 billion in 1981 dollars for the baseline program.

There are many opinions about the actual costs of the B–1 program with assertions that the actual costs might be up to $6 billion more than the $20.5 billion we have promised.

First, let me say that we have promised you that we will bring a program in at $20.5 billion in 1981 dollars and we are very, very confident we will do so.

The confusion seems to be centered around the difference between three different cost numbers produced by three different agencies at three different times under three different sets of ground rules.

That is three times three times three.

You can imagine how many different total numbers you can have.

The General Accounting Office examined these three cost estimates and concluded or at least implied a fourth figure. Now, I will try to clear up the rationale behind these differing estimates.

In the spring of last year, the Air Force tasked an independent agency to conduct a cost analysis starting from the bottom and working up through the entire program.

This Air Force independent cost analysis, or ICA, assumed some worst case conditions and was conducted before the firm contracts were signed.

Nonetheless, the Air Force independent cost estimate for the baseline package was about $21 billion, within 3 percent of the Air Force program manager's estimates of $20.5 billion.

That $21 billion had external carriage of cruise missiles on it.

I believe that if that same independent study were conducted today using the known contracted values, they might come up with the program manager's costs or even lower figures.

Shortly after the Air Force completed its independent analysis, we at OSD worked up our own cost risk analysis using our own independent cost analysis group. This effort was not a complete top to bottom estimate of the overall program costs, but rather an assessment of where the potential cost growth areas might be and an estimate of what they could cost.

It was also an upper bound estimate and was conducted before the contracts were defined and negotiated and before the Secretary of Defense approved and defined the exact baseline system that would be procured.

The OSD cost group therefore concluded that the program could cost up to $4.7 billion more than the Air Force program manager's estimate of $20.5 billion, but their conclusions were based on the inclusion of tasks not contained in the Secretary of Defense baseline, such as interim contractor support, higher airframe costs, forward looking infrared and other items.

At this point in history, we had three numbers to work with: The Air Force program manager's cost of $20.5 billion, the Air Force ICA figure of $21 billion, and the OSD upper bound estimates that said that the Air Force manager's figure might be low by $4.7 billion if the OSD cost group assumptions were part of the program.

Prior to the Secretary's definition of the program, each of the three estimates was based on a slightly different description of what the baseline configuration would be. Some included 7 bases to operate out of and other only four; some assumed differing savings through learning experience on the production line; and there were discrepancies as to what constituted sufficient spares and depot level support.

Early in November the Secretary of Defense established the offical baseline system definition from which all future costs and program actions will be derived. This event bounded the aircraft configuration, the support requirements and the cost estimate and resulted in direction to the Air Force that any change to the baseline system must be approved by the Deputy Secretary of Defense.

The November memorandum did not end the many discussions about what should be included in the baseline program, however. The GAO, in their most recent briefing on program costs, still compares three different systems with three different content and different assumptions—and in addition observes that an additional $1.4 billion of equipment, services, and facilities should be included in the baseline cost figures.

We are now over six months into the B-1B program and we have signed contracts for slightly over 25 percent of the total program cost. We know what the hardware is going to cost.

In some cases the actual contract values are less than the baseline estimates. There is actual hardware being produced in real plants using existing production drawings. This is becoming a mature program where virtually all of the engineering risks have already been identified and actions taken to resolve them.

Since we have provided for a 6 percent engineering change factor, we are confident that we can manage the program within our baseline.

As to whether or not the baseline should include all of the peripheral and support costs, we have to draw the line somewhere.

I participated in those discussions.

Most Air Force programs do not fund military construction, system spares, and operations and maintenance costs in the basic program.

We at OSD have directed a baseline program cost that does not include those figures, but all associated B-1B costs are clearly labeled as such throughout the budget submission.

There is no attempt to bury any of the costs or hide a thing from anyone.

Our best estimate of these peripheral costs indicate they will total over $1 billion in 1981 dollars. They are not cost increases or contingency factors, or slush funds, but solid program requirements. It is our intention to live within our estimate in this area as well.

The B-1B has all the essential characteristics of a modern bomber: fast base escape, hardening to nuclear effects, low radar cross section, penetration capability, long range with large payloads and the ability to seek out and destroy an increasingly mobile Soviet target base.

These characteristics will make the B-B1 extremely useful well into the next century, and we will bring it in for the stated costs.

The third part of the bomber modernization plan is the development and production of an advanced technology bomber with an IOC in the early 1990s. Acquiring the B–1B while continuing to pursue the ATB is the most prudent approach for revitalizing our strategic bomber force. It enables us to field the necessary deterrent forces required during a period when the United States must depend heavily on bombers, until we have taken the proper steps to strengthen our land-based missiles.

This duel approach provides time for an orderly and logical development pace of the ATB, thus avoiding costly major redesigns which could result from an inappropriately accelerated program.

The ATB is being developed using low observable techniques to negate the effectiveness of present and projected air defenses. The technologies involved are promising, but, because of the major advance required in several areas and the consequent uncertainties involved, there would be a high degree of risk in concentrating solely on the ATB.

For these reasons and others, a significant acceleration of this important program is not advisable at this time.

However, we are confident that an orderly development program will enable us to best resolve these uncertainties and develop an ATB that represents a technological advance of extraordinary military significance.

When deployed in the 1990s, the ATB will augment the B–1B's capability and contribute dramatically to the strength and deterrent value of our strategic forces well into the next century.

Along with ALCM deployment, the B–52 modifications, the B–1B/ATB program, we are pursuing important upgrades to the bomber infrastructure.

These consist of: Upgrading the C^3I, bomber rebasing, and air refueling modernization.

Recently, the first re-engined KC–135 was rolled out. This aircraft will undergo an extensive test program during the next year, and our planned force upgrade will yield a flexible and modern tanker, capable of worldwide operations well into the next century.

The bomber modernization program is an integrated portion of the President's overall strategic modernization program. These projects are time phased to assure a credible deterrent during the next two decades and a bomber force capable of worldwide operations.

A combined force of B–1Bs, ATBs, and cruise missiles places maximum stress on Soviet air defenses and provides significant deterrence in our long-term strategic competition with the Soviets. They must pay attention immediately.

Thank you for the opportunity to discuss this vital area.

This concludes my prepared remarks and I would now be happy to answer any questions you may have.

[The statement of Mr. DeLauer follows:]

STATEMENT ON STRATEGIC BOMBER MODERNIZATION
B-1B, ATB & ALCM
BY
THE HONORABLE RICHARD D. DELAUER
UNDER SECRETARY OF DEFENSE
FOR
RESEARCH AND ENGINEERING
BEFORE THE
HOUSE APPROPRIATIONS COMMITTEE
JULY 1982

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE

I APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE YOU TODAY IN SUPPORT OF OUR STRATEGIC BOMBER MODERNIZATION PROGRAM. THIS MORNING I WOULD LIKE TO RESTRICT MY REMARKS TO THE B-1B, THE AIR LAUNCHED CRUISE MISSILE PROGRAM AND OTHER STRATEGIC SUPPORT PROGRAMS. I WILL TREAT THE ADVANCED TECHNOLOGY BOMBER IN VERY GENERAL TERMS AND WILL RESERVE DETAILED COMMENTS ON THE ATB UNTIL THE AFTERNOON SESSION.

IMPROVING THE BOMBER FORCE IS A VITAL PART OF THE PRESIDENT'S FIVE-PART PROGRAM FOR MODERNIZATION OF THE STRATEGIC FORCES. IN 1981 CONGRESS DIRECTED AN UPDATE TO OUR BOMBER FORCES CONSISTENT WITH THE PRESIDENT'S PLAN. YOU DIRECTED US TO PRODUCE AND DEPLOY 100 B-1B BOMBERS AND TO CONTINUE RESEARCH AND DEVELOPMENT FOR AN ADVANCED TECHNOLOGY BOMBER. IN ADDITION, YOU AUTHORIZED AND FUNDED CONTINUED DEPLOYMENT OF THE AIR LAUNCHED CRUISE MISSILE (ALCM), MODIFICATIONS FOR THE B-52s TO CARRY IT, AND MODERNIZATION OF OUR AIR REFUELING CAPABILITY. WITH THESE DECISIONS, THE FIRST MAJOR UPGRADE TO THE STRATEGIC BOMBER FORCES IN OVER TWO DECADES WAS PLACED IN MOTION.

WE INTEND TO PURSUE THIS IMPROVEMENT PROGRAM IN THREE OVERLAPPING PHASES. THE FIRST WILL CONTINUE THE ALCM AND B-52 MODERNIZATION PROGRAMS. THE FIRST MODIFIED B-52 WITH ITS ALCM PAYLOAD IS ALREADY ON ALERT -- ON SCHEDULE. THE FIRST FULL SQUADRON WILL BE ALERT CAPABLE LATER THIS YEAR, AND ON SCHEDULE. WE INTEND TO DEPLOY LARGE NUMBERS OF CRUISE MISSILES DURING THIS DECADE. THEY WILL POSE A SERIOUS AIR DEFENSE PROBLEM FOR THE SOVIET UNION.

THE SECOND OR MID-TERM PHASE OF THE BOMBER PROGRAM IS THE DEPLOYMENT OF THE B-1B. THE LIMITATIONS OF THE AGING B-52 FORCE MAKE IT IMPERATIVE THAT THE B-1B IS DEPLOYED RAPIDLY. WE INTEND TO MEET OUR COMMITMENT TO AN INITIAL OPERATIONAL CAPABILITY OF ONE SQUADRON IN 1986 WITH THE ONE HUNDREDTH BOMBER DELIVERED BY MID-1988. WE WILL DO THIS WITHIN THE STATED DOLLAR OBJECTIVE OF $20.5 BILLION IN 1981 DOLLARS FOR THE BASELINE PROGRAM PACKAGE.

NOW, THERE HAVE BEEN MANY OPINIONS ABOUT THE ACTUAL COST OF THE B-1B PROGRAM WITH ASSERTIONS THAT THE ACTUAL COST MIGHT BE UP TO $6 BILLION MORE THAN THE $20.5 BILLION WE HAVE PROMISED. FIRST LET ME SAY THAT WE HAVE PROMISED YOU WE WILL BRING IN THE PROGRAM AT $20.5 BILLION IN 1981 DOLLARS, AND WE WILL DO SO. THE CONFUSION SEEMS TO CENTER AROUND THE DIFFERENCE BETWEEN THREE DIFFERENT COST NUMBERS PRODUCED BY THREE DIFFERENT AGENCIES AT THREE DIFFERENT TIMES, UNDER THREE DIFFERENT SETS OF GROUND RULES. THE GENERAL ACCOUNTING OFFICE EXAMINED THESE THREE COST ESTIMATES AND CONCLUDED, OR AT LEAST IMPLIED, A FOURTH FIGURE. NOW, LET ME TRY TO CLEAR UP THE RATIONALE BEHIND THESE DIFFERING ESTIMATES:

IN THE FALL OF LAST YEAR THE AIR FORCE TASKED AN INDEPENDENT AGENCY TO CONDUCT A COST ANALYSIS STARTING FROM THE BOTTOM AND WORKING UP THROUGH THE ENTIRE PROGRAM. THIS AIR FORCE "ICA" ASSUMED SOME WORST CASE CONDITIONS AND WAS CONDUCTED BEFORE THE FIRM CONTRACTS WERE SIGNED. NONE THE LESS, THE AIR FORCE INDEPENDENT COST ESTIMATE FOR THE BASELINE PACKAGE WAS ABOUT $21.0 BILLION -- WITHIN 3% OF THE AIR FORCE PROGRAM MANAGER'S ESTIMATES OF $20.5 BILLION. I BELIEVE THAT IF THAT SAME INDEPENDENT STUDY WERE CONDUCTED TODAY USING THE KNOWN CONTRACTED VALUES, THEY MIGHT COME UP WITH THE PROGRAM MANAGER'S COSTS OR EVEN LOWER FIGURES.

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SHORTLY AFTER THE AIR FORCE COMPLETED ITS INDEPENDENT ANALYSIS, WE AT OSD WORKED UP OUR OWN COST RISK ANALYSIS USING OUR OWN INDEPENDENT COST ANALYSIS. THIS EFFORT WAS NOT A COMPLETE TOP TO BOTTOM ESTIMATE OF THE OVERALL PROGRAM COSTS, BUT RATHER AN ASSESSMENT OF WHERE THE POTENTIAL COST GROWTH AREAS MIGHT BE AND AN ESTIMATE OF WHAT THEY COULD COST. IT WAS ALSO AN UPPER BOUND ESTIMATE AND WAS CONDUCTED BEFORE THE CONTRACTS WERE DEFINED AND NEGOTIATED AND BEFORE THE SECRETARY OF DEFENSE APPROVED AND DEFINED THE EXACT BASELINE SYSTEM THAT WOULD BE PROCURED. THE OSD COSTS GROUP THEREFORE CONCLUDED THAT THE PROGRAM COULD COST UP TO $4.7 BILLION MORE THAN THE AIR FORCE PROGRAM MANAGER'S ESTIMATE OF $20.5 BILLION, BUT THEIR CONCLUSIONS WERE BASED ON THE INCLUSION OF TASKS NOT CONTAINED IN THE SECRETARY OF DEFENSE BASELINE, SUCH AS INTERIM CONTRACTOR SUPPORT, HIGHER AIRFRAME COSTS, FORWARD LOOKING INFRARED AND OTHER ITEMS. AT THIS POINT IN HISTORY WE HAD THREE NUMBERS TO WORK WITH: THE AIR FORCE PROGRAM MANAGER'S COST OF $20.5 BILLION, THE AIR FORCE ICA FIGURE OF $21.0 BILLION, AND THE OSD UPPER BOUND ESTIMATES THAT SAID THAT THE AIR FORCE MANAGER'S FIGURE MIGHT BE LOW BY $4.7 BILLION IF THE OSD COST GROUPS ASSUMPTIONS WERE PART OF THE PROGRAM.

PRIOR TO THE SECRETARY'S DEFINITION OF THE PROGRAM, EACH OF THE THREE ESTIMATES WAS BASED ON A SLIGHTLY DIFFERENT DESCRIPTION OF WHAT THE "BASELINE" CONFIGURATION WOULD BE. SOME INCLUDED 7 BASES AND OTHERS ONLY FOUR; SOME ASSUMED DIFFERING SAVINGS THROUGH LEARNING EXPERIENCE ON THE PRODUCTION LINE; AND THERE WERE DISCREPANCIES AS TO WHAT CONSTITUTED SUFFICIENT SPARES AND DEPOT LEVEL SUPPORT. EARLY IN NOVEMBER THE SECRETARY OF DEFENSE ESTABLISHED THE OFFICIAL BASELINE SYSTEM DEFINITION FROM WHICH ALL FUTURE COSTS AND PROGRAM ACTIONS WILL BE DERIVED. THIS EVENT BOUNDED THE AIRCRAFT CONFIGURATION, THE SUPPORT REQUIREMENTS AND THE COST ESTIMATE AND RESULTED IN DIRECTION TO THE AIR FORCE THAT ANY CHANGE TO THE BASELINE SYSTEM MUST BE APPROVED BY THE DEPUTY SECRETARY OF DEFENSE.

THE NOVEMBER MEMORANDUM DID NOT END THE MANY DISCUSSIONS ABOUT WHAT SHOULD BE INCLUDED IN THE BASELINE PROGRAM, HOWEVER. THE GAO IN THEIR MOST RECENT BRIEFING ON PROGRAM COSTS STILL COMPARES THREE DIFFERENT SYSTEMS WITH DIFFERING CONTENT AND DIFFERING ASSUMPTIONS -- AND IN ADDITION, OBSERVES THAT AN ADDITIONAL $1.4 BILLION OF EQUIPMENT, SERVICES, AND FACILITIES SHOULD BE INCLUDED IN THE BASELINE COST FIGURES.

WE ARE NOW OVER SIX MONTHS INTO THE B-1B PROGRAM AND WE HAVE SIGNED CONTRACTS FOR SLIGHTLY OVER 25% OF THE TOTAL PROGRAM COST. WE KNOW WHAT THE HARDWARE IS GOING TO COST. IN SOME CASES THE ACTUAL CONTRACT VALUES ARE LESS THAN THE BASELINE ESTIMATES. THERE IS ACTUAL HARDWARE BEING PRODUCED IN REAL PLANTS USING EXISTING PRODUCTION DRAWINGS. THIS IS BECOMING A MATURE PROGRAM WHERE VIRTUALLY ALL OF THE ENGINEERING RISKS HAVE ALREADY BEEN IDENTIFIED AND ACTIONS TAKEN TO RESOLVE THEM. SINCE WE HAVE PROVIDED FOR A 6% ENGINEERING CHANGE FACTOR, WE ARE CONFIDENT THAT WE CAN MANAGE THE PROGRAM WITHIN OUR BASELINE.

AS TO WHETHER OR NOT THE BASELINE SHOULD INCLUDE ALL OF THE PERIPHERAL AND SUPPORT COSTS, WE HAVE TO DRAW THE LINE SOMEWHERE, MOST AIR FORCE PROGRAMS DO NOT FUND MILITARY CONSTRUCTION, SYSTEM SPARES, AND OPERATIONS AND MAINTENCNCE COSTS IN THE BASIC PROGRAM. WE AT OSD HAVE DIRECTED A BASELINE PROGRAM COST THAT DOES NOT INCLUDE THOSE FIGURES, BUT ALL ASSOCIATED B-1B COSTS ARE CLEARLY LABELED AS SUCH THROUGHOUT THE BUDGET SUBMISSION. WE ARE NOT TRYING TO HIDE A THING FROM ANYONE. OUR BEST ESTIMATES OF THESE PERIPHERAL COSTS INDICATE THEY WILL TOTAL ABOUT $1.4 BILLION IN 1981 DOLLARS. THEY ARE NOT COST INCREASES OR FUDGE FACTORS, OR SLUSH FUNDS, BUT SOLID PROGRAM REQUIREMENTS. IT IS OUR INTENTION TO LIVE WITHIN OUR ESTIMATES IN THIS AREA AS WELL.

THE B-1B HAS ALL THE ESSENTIAL CHARACTERISTICS OF A MODERN BOMBER: FAST BASE ESCAPE, HARDENING TO NUCLEAR EFFECTS, LOW RADAR CROSS SECTION, PENETRATION CAPABILITY, LONG RANGE WITH LARGE PAYLOADS AND THE ABILITY TO SEEK OUT AND DESTROY AN INCREASINGLY MOBILE SOVIET TARGET BASE. THESE CHARACTERISTICS WILL MAKE THE B-1B EXTREMELY USEFUL WELL INTO THE NEXT CENTURY, AND WE WILL BRING IT IN FOR THE STATED COSTS.

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THE THIRD PART OF THE BOMBER MODERNIZATION PLAN IS THE DEVELOPMENT AND PRODUCTION OF AN ADVANCED TECHNOLOGY BOMBER (ATB) WITH AN IOC IN THE EARLY 1990S. ACQUIRING THE B-1B WHILE CONTINUING TO PURSUE THE ATB IS THE MOST PRUDENT APPROACH FOR REVITALIZING OUR STRATEGIC BOMBER FORCES. IT ENABLES US TO FIELD THE NECESSARY DETERRENT FORCES REQUIRED DURING A PERIOD WHEN THE UNITED STATES MUST DEPEND HEAVILY ON BOMBERS, UNTIL WE HAVE TAKEN THE PROPER STEPS TO STRENGTHEN OUR LAND-BASED MISSILES. THIS DUAL APPROACH PROVIDES TIME FOR AN ORDERLY AND LOGICAL DEVELOPMENT PACE OF THE ATB; THUS AVOIDING COSTLY MAJOR REDESIGNS WHICH COULD RESULT FROM AN INAPPROPRIATELY ACCELERATED PROGRAM. THE ATB IS BEING DEVELOPED USING LOW OBSERVABLE TECHNIQUES TO NEGATE THE EFFECTIVENESS OF PRESENT AND PROJECTED AIR DEFENSES. THE TECHNOLOGIES INVOLVED ARE PROMISING, BUT BECAUSE OF THE MAJOR ADVANCES REQUIRED IN SEVERAL AREAS AND THE CONSEQUENT UNCERTAINTIES INVOLVED, THERE WOULD BE A HIGH DEGREE OF RISK IN CONCENTRATING SOLELY ON THE ATB. FOR THESE REASONS AND OTHERS, A SIGNIFICANT ACCELERATION OF THIS IMPORTANT PROGRAM IS NOT ADVISABLE AT THIS TIME. HOWEVER, WE ARE CONFIDENT THAT AN ORDERLY DEVELOPMENT PROGRAM WILL ENABLE US TO BEST RESOLVE THESE UNCERTAINTIES AND DEVELOP AN ATB THAT REPRESENTS A TECHNOLOGICAL ADVANCE OF EXTRAORDINARY MILITARY SIGNIFICANCE. WHEN DEPLOYED IN THE 1990S, THE ATB WILL AUGMENT THE B-1B's CAPABILITY AND CONTRIBUTE DRAMATICALLY TO THE STRENGTH AND DETERRENT VALUE OF OUR STRATEGIC FORCES WELL INTO THE NEXT CENTURY.

ALONG WITH ALCM DEPLOYMENT, B-52 MODIFICATIONS, AND THE B-1B/ATB PROGRAM, WE ARE PURSUING IMPORTANT UPGRADES TO THE BOMBER INFRASTRUCTURE. THESE CONSIST OF: UPGRADING THE C^3I, BOMBER REBASING, AND AIR REFUELING MODERNIZATION. RECENTLY, THE FIRST RE-ENGINED KC-135 WAS ROLLED-OUT. THIS AIRCRAFT WILL UNDERGO AN EXTENSIVE TEST PROGRAM DURING THE NEXT YEAR, AND OUR PLANNED FORCE UPGRADE WILL YIELD A FLEXIBLE AND MODERN TANKER, CAPABLE OF WORLDWIDE OPERATIONS WELL INTO THE NEXT CENTURY.

THE BOMBER MODERNIZATION PROGRAM IS AN INTEGRATED PORTION OF THE PRESIDENT'S OVERALL STRATEGIC MODERNIZATION PROGRAM. THESE PROJECTS ARE TIME PHASED TO ASSURE A CREDIBLE DETERRENT DURING THE NEXT TWO DECADES AND A BOMBER FORCE CAPABLE OF WORLDWIDE OPERATIONS. A COMBINED FORCE OF B-1BS, ATBS, AND CRUISE MISSILES PLACES MAXIMUM STRESS ON SOVIET AIR DEFENSES AND PROVIDES SIGNIFICANT DETERRENCE IN OUR LONG-TERM STRATEGIC COMPETITION WITH THE SOVIETS.

THANK YOU FOR THE OPPORTUNITY TO DISCUSS THIS VITAL AREA.

THIS CONCLUDES MY PREPARED REMARKS AND I WOULD NOW BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE.

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DIFFERING COST ESTIMATES

Mr. ADDABBO. Dr. DeLauer, your statement includes a lengthy rationale for the differences in three cost estimates for the B-1 program. You state "the confusion seems to center around the difference between three different cost numbers produced by three different agencies at three different times, under three different sets of ground rules."

Let us examine your point concerning timing. First, early in 1981 the B-1 SPO estimate was prepared assuming no ALCM carriage. OSD used that same estimate, and added $800 million for internal and external ALCM carriage, in announcing its estimate in October 1981 and in the Secretary Carlucci's memorandum of November 4, 1981. Therefore, OSD accepted the SPO estimate as valid, in October and November. Second, the Air Force independent analysis was completed on September 25, and presented to the LRCA Steering Group on October 2, 1981. Third, the OSD CAIG report is dated November 2, 1981.

There is a space of three months when all these reports were available. Why do you say they were produced at different times? Don't you feel from September to November is about the same time, in practical terms?

Dr. DELAUER. Mr. Chairman, they were reported at the same time, but they were generated over a different period of time.

For instance, the original program manager's cost estimate, was really $19.7 billion and did not include ALCM carriage, internally or externally.

When we got finished in OSD reviewing the baseline, the decision was made, as you noted, by Frank Carlucci, that we were not going to build a B-1B without an ALCM capability.

He directed that we have internal and external carriage included, and that boosted the cost estimate from $19.7 billion to $20.5 billion. That is how we arrived at the $20.5 billion, of which $800 million was for that particular change.

That was a decision by the Deputy Secretary as to what was to be included in the baseline.

If you will look at the detail of the things the CAIG reviewed, it is clear they looked at in a parametric way. They said, "Look, we have built airframes at these different costs per pound. We think you are low. You have not included certain elements in your program. Why don't you include them?"

They looked at the B-1 as a total program, not the fact that the elements such as simulators would be carried in a different line item. They lumped all those together as the B-1B costs, and that is what they presented.

At that time we were in the process of structuring the program, one that we could come to Congress and say this is what it will look like. This is what it will cost. Here is how we will build it for you.

The nature of the program was generated in that last month and a half after the Air Force made the presentation to the Secretary of Defense of what the B-1 bomber program was going to be. That is why, while I argue they were done over a different period of

time, I have to admit they were all reported within a 60-day period of each other. That is when the rationalization came about.

CHOOSING THE LOWEST ESTIMATE

Mr. ADDABBO. So the $800 million figure that Secretary Carlucci added was obtained from the Air Force internal and independent analysis and/or the CAIG report.

Dr. DELAUER. That is right.

Mr. ADDABBO. So when we received the testimony by Secretary Carlucci and others before this committee, they had full knowledge and availability of the three reports. They chose, as far as I am concerned—I will not speak for the committee—to use the lowest of the three figures. Yet the Secretary's office, knew that these other reports showed higher figures. Furthermore, in looking at the GAO reports—and I imagine you have looked at the GAO reports—we find higher costs projected based on experience with prior weapons system programs. They asked what was included in pricing a weapon system previously? What were the groundrules? Having done so, GAO arrived at higher cost figures.

This was not the course taken by the Secretary's Office. Again you can choose whatever figures you want to present. If we don't ask the right questions, we don't get the right answers. I think the gentleman from Alabama once said that. Maybe we are not asking the right questions.

Dr. DELAUER. May I respond to that, Mr. Chairman?

Mr. ADDABBO. We were not given the information we should have been given. The American people were not given that information.

Dr. DELAUER. Let me respond to you on how the ground rules evolved. Let me give three or four examples of how the baseline was established. I worked personally on that. There was no question that what we wanted to do was be sure that if these aircraft operated———. That is the concept.

As a consequence, they do not carry this sort of thing. All our weapons systems———have this. It looked like for future aircraft we ought to have them in. What was uncertain at the time was that no one had made an estimate of how er were going to put that——— in, and how much it would cost.

What we had were different group's estimates of what they thought was needed and how much it was going to cost.

The CAIG, for example, had an amount in there———that I thought was excessive. When I reviewed the numbers along with Bob Mathis, The Air Force Vice Chief of Staff, we came to the same conclusion. The uncertainty was so large in it that I said, "Look, take that out. We will find out exactly how much that will cost and see if it could possibly be included in the engineering change proposal for which we have set aside six percent." Let me now jump to that one.

The CAIG's estimate was that most programs experience a ten percent change. However most programs don't have a $6 billion development program ahead of them. For most programs, when you estimate the percentage of changes in program costs, you have to account for the fact you will be making changes as you enter production. In turn, these costs feed back into production tooling and

the articles that are already in the production line, and they tend to run the program up higher, to a number like ten percent.

When we examined that in detail, for the B-1B, and production tooling, and what they had on hand, we made the estimate that engineering change proposals could be kept within six percent. That still is a lot of dollars.

Six percent of total costs is close to a billion dollars. So there are some changes that can be accomplished.

Mr. ADDABBO. That is the difference between $200 million and $400 million.

Dr. DELAUER. Not yet, let me continue. So we put the parameter of 6 percent in. Next came the learning curve, a critical item that had to be considered in the price. The learning curves of most Air Force programs are about 79 percent. The contractor, when he was proposing to us, said that he felt that he could work to a lower learning curve based on the fact they already had most of the engineering configuration drawings in hand; and they were developing the tooling. He wanted to go with something like a 73 percent learning curve. That is a tough learning curve to achieve. It has been done, but not on military programs. It has been done on commercial programs where they have a pretty stable effort. It is money in their pocket.

The contract, when we wrote it was based on our price estimate of a 79 percent learning curve. The program manager settled on that number, so we have fixed price incentive contracts with Rockwell based on that value.

So that was a different number than used by the CAIG.

The other thing was the simulators. The simulators for military aircraft, particularly in the Air Force, have tended to be a bone of contention because simulators, through the development phase are an added cost to the program manager and tend to get the back seat.

The Air Force recognized this a few years ago and pulled simulators from the responsibilities of the program manager and simulators assigned elsewhere. They have a lot to do with how much you train, how you train, and what should be contained in the training concept so they are important. Consequently, the Air Force established the simulator SPO. The decision was made to include the B-1 simulator under the simulator SPO to ensure the SPO would be responsive to the training command as well as to the developer and thus able to configure the simulator to do the job for everybody.

That is where it is identified.

As a matter of fact, in the SAR report we go out of our way to asterisk it and call your attentioin to the fact it is in there.

So we are not hiding anything. Those were the kinds of management decisions that were made. They were management decisions made on, in some cases, my own experience. In other cases, it is OSD policy to separate these things out and price them apart from the program. Yet others are based on the fact that the cost of some of the items were just not well known enough at that time, and including them would therefore provide such an uncertainty in our total costs that I couldn't come back to you and say we will promise to bring it in at $20.5 billion.

If some of these changes are too expensive, we will not do them. The FLIR, for instance is not worth much in a modern penetrating bomber. We are not going to put it in.

Mr. ADDABBO. I will mark those words down in red and wait a year from now when you come back and ask for that money.

Dr. DELAUER. As long as I am there, they will not get a FLIR. There is one place where a FLIR could be utilized and that is in the high altitude conventional role, but in the SIOP for the B-1B penetration role a FLIR is not that beneficial.

What we provided in the B-1B is space and power provisions, but we have not gone after the FLIR.

Mr. ADDABBO. As I said before, if we don't ask the right questions, you are able to talk us to death and you are able to cover up everything that was being done.

In other words, you don't need it in the B-1 today; you can use it tomorrow, so you'll put it in a different appropriation and look at it tomorrow.

The gentleman from Alabama?

EXTRAS FOR B-1B

Mr. EDWARDS. Thank you, Mr. Chairman.

Part of what you said about these so-called extras is that you intended all along to put them in the contingency part of the $20.5 billion, is that right?

Dr. DELAUER. It depends on which one, Mr. Edwards.

Mr. EDWARDS. You mentioned the ———.

Dr. DELAUER. We are considering getting an engineering change order on that now. It varies in price whether we use one of the existing computers to handle it or make it completely separate.

Mr. EDWARDS. It was your intention, once you found out the price, to include that within the 6 percent contingency?

Dr. DELAUER. That is absolutely right.

Mr. EDWARDS. Your contention here is, and always has been, I gather, that you had not intended for that to increase the cost of the B-1 and you are saying here that it will not?

Dr. DELAUER. It will not.

Mr. EDWARDS. That is one type of example.

The other one, probably the one that sticks out the most in everybody's mind, I suppose, is the simulator.

We have been told that all along everybody understood; it was never hidden; it was always out in front that that would be separate and apart from the acquisition cost of the B-1; and, therefore, it would be something in excess of $20.5 billion. Is that fairly put?

Dr. DELAUER. I think if you have everything associated with the B-1 that is tied to its military utilization, yes, there are additional costs over the $20.5 billion, but that is not what we presented.

We said this package, which includes an airplane, airframe, avionics, engines, initial spares, peculiar support equipment, and after testing and delivery will cost $20.5 billion.

Mr. EDWARDS. I understand that and I believe you are going to do it.

Dr. DELAUER. I know we are.

Mr. EDWARDS. Because you have no choice. You have to do it.

Dr. DeLauer. I could always resign.

Mr. Edwards. Be that as it may, there still must be, in fact, added to that $20.5 billion the cost of a simulator.

Whatever description you put on it, you will spend somewhere along the way about $300 million for a simulator.

Dr. DeLauer. Probably.

Mr. Edwards. Your response to us is, well, you guys knew that all along. We never hid the fact that would be an extra cost?

Dr. DeLauer. That and the fact that we don't normally put it in as a program cost item.

SIMULATORS AS PART OF AIRCRAFT PROGRAMS

Mr. Edwards. Okay. Now you got to where I was going.

The GAO testified last week—and I will back up if somebody says I am incorrect—but it is my recollection they testified last week that, in fact, in most aircraft procurement or acquisition programs the simulator is, in fact, a part of the cost.

Do I understand you to say that that is not the case?

Dr. DeLauer. As best I understand it, we established the simulator SPO about three years ago.

Mr. Edwards. You mean for airplanes generally or the B-1?

Dr. DeLauer. For airplanes generally. As I related earlier, there was an argument on whether or not simulators were being procured properly since experience showed they were the first elements impacted in a program when they found they were having problems.

The Air Force made a management decision to not buy those in the program itself. We will buy them in a separate buying organization with separate requirements. They established the simulator SPO.

I don't think there has been another airplane program started since the time they established the SPO until now.

We will buy the simulators for the ATB the very same way. They will come into the SPO.

What happened was that part of the problem was a consequence of the F-111 and the F-15, when they ran into problems with the simulators, and to an extent, the F-16 also. Those were forcing functions to establish the SPO separately.

So I think—I won't take any quarrel with the GAO. They say all past programs included it. I think what has to be recognized is that there has been a management decision to do those separately, and it was done before we every got to the B-1B: since there was no B-1B, it was done in the previous administration.

Mr. Edwards. They said that on the F-15, F-16 and the A-10, in fact the simulator development and production was a part of the acquisition program.

What was it that occurred that you just referred to that caused the change in approach?

Dr. DeLauer. I have given you a little——

Mr. Edwards. You said some problem occurred.

General Russ. Let me see if I can explain it a little bit.

Mr. Edwards. Let me tell you what Mr. Murphy said. When you had problems with the cost overruns of the simulator on the F-15,

we directed you to take simulators away from the prime contractor and deal with the simulator contractor direct; but Mr. Murphy made the point, we did not tell you at the same time to withdraw the cost of those simulators from the total program acquisition cost.

Did I put it right, Pete?

Mr. MURPHY. Yes, sir.

Dr. DELAUER. We carried your instructions one step further.

General RUSS. Let me give you the background on it and then how it is administratively counted is another matter.

The point is, the SPO handles the aircraft, his primary concern is developing and acquiring that aircraft. What has happened to us before—and the F-15 is a case in point—where he was handling the simulator for the F-15, it tended to take second fiddle, the simulator did.

If there was a cost overrun in another part of the program, he tended to use some of the reserves from the simulator because the leading element of his program was getting the airplane produced.

This resulted in simulators being delayed going into the field. In other words, we would get the airplanes into the field and it would be six months to a year to sometimes two years beyond what was planned before we would get the simulator.

We decided to take the simulators out and put somebody in charge of simulators, someone that we could say, you get the simulators; you have this pot of money, you manage it and we will watch your schedule specifically.

We feel this is a much better way to do it.

I will say that that is not universally liked in the community. The guy who runs the aircraft SPO doesn't necessarily like that. He wants to run it all. We think from a management viewpoint that is the best way to do it because we will get the airplane that way and also the simulator.

Dr. DELAUER. An added point is, if you have somebody responsible for the simulator, you get some learning from one program to the next. The tendency in the past was they looked at them with tunnel vision and only looked at it in that particular program requirement. There are economies that could have been made. They use common power supplies, and some amount of software and software logic is the same. This way, when I discussed it with the Air Force, we came to the conclusion that it was the most cost effective way to procure simulators.

Mr. EDWARDS. It never, ever was done with the intention of trying to fuzz up the numbers on the B-1, was it?

Dr. DELAUER. No sir, that would be wrong.

General RUSS. From day one——

Mr. EDWARDS. Let the record show there was great buzzing in the committee room.

Mr. ADDABBO. Wailing and gnashing of teeth.

Mr. EDWARDS. Your point, if I understood you correctly, all the buzzing and gnashing of teeth aside, was you made this decision some three years ago to go in that direction?

Dr. DELAUER. That is right, and the B-1 happened to be the first one to come down the line.

General RUSS. I might say the next generation trainer will follow the same sort of procedure. In fact, we are in the process of working that problem out now.

OTHER ADDED B-1 COSTS

Mr. EDWARDS. Part of what we have been trying to get at—the Chairman got into it and I am sure the other members will as we go through these hearings—is given the simulator is an extra added cost, if you will, what other extra added costs are out there that we should have been aware of or should have known about?

I guess that is kind of where we are coming down. Let me just throw this one at you. Then I will sit back and let you comment and I will yield the floor, Mr. Chairman.

I am not as smart as most of the guys on this committee. I never can understand some of these things that I look at. I am looking now at the SPO—this is a GAO document. I believe you used these numbers yourself. I am looking at the SPO $20.530 billion, the Air Force independent estimate $21.013 billion, and the OSD independent estimate $25.270 billion.

Everybody is sticking with the $20.530 billion. Explain to me in Alabamese, if you can, why the first number is the accurate number?

Dr. DELAUER. The $20.530 billion?

Mr. EDWARDS. As opposed to the other numbers.

Dr. DELAUER. The things we took out of the $21.013 billion as well as the $25.7 billion, the FLIR was one. We took out the ——— transmitter. We took out some communications, particularly ———. We don't know quite how to do that yet. We did not include the fatigue test article. We did not include EMP trestle testing. Those are the ones we took out.

What we included below the line, or those things that were in the program but not in the $20.5 billion, were the simulators. We already talked about that. We also talked about the component improvement program for the F101 engine.

That was not included because an engine component improvement program always stays in the engine program line. That is where you want it.

The interim contractor support was also taken out and identified as a separate program element. The facilities improvement, which is done throughout the Air Force as a separate item, and the manufacturing technology that is applicable to this program is in the industrial readiness line item where you want us to put it. So those four items, the simulators, and the other items, are below the line. In 1983 they do not represent any money except in production facilities improvements. In the 1984 to 1988 time period, there is a significant number of dollars, almost a billion dollars.

Mr. EDWARDS. You don't really have any argument with what GAO has said in that regard? With the explanation you have just given us?

Dr. DELAUER. If they agree with me, I don't have an argument with them. I think the Air Force would like to comment on some differences.

General RUSS. Sir, let me say a major difference between the three estimates was the learning curve or how fast do you learn when you produce the airplane. That ranged between what the Air Force said of almost $10 billion to over $11 billion in the OSD estimate and $11 billion in the independent estimate.

Learning curve was a big thing. The support equipment was another big thing.

A third big thing was whether you take credit for multiyear procurement. Those are kind of the big chunks between the $25 billion and the $20.5 billion. These other things Dr. DeLauer said were erroneously thrown in at various times. They confuse everyone by saying, by the way, they didn't cost this; they didn't cost that.

The big three things were the difference. You should just zero in on those three things, there's other changes I will agree, but those are the big ones.

Mr. EDWARDS. I will put in the record at this point three pages from the GAO report that was made to us earlier this week. If you have any disagreement with those numbers, I wish you would comment on them.

Dr. DELAUER. Okay. Will we also have the privilege of commenting on what was included and what was not included in the baseline?

Mr. EDWARDS. Right, that is what this is. That is the baseline, the identified additions to the baseline, and the potential costs if the program is expanded.

[The information follows:]

SUMMARY COMPARISON OF ESTIMATES

[In billions of fiscal year 1981 dollars]

Cost category	SPO	Air Force independent estimate	OSD independent estimate
"Baseline":			
Airframe	$9.855	$11.258	$11.285
Engine	1.770	1.885	1.800
Avionics	2.885	3.165	3.515
System test	.535	.253	.535
ECO/management reserve	.700	.800	1.162
Nonrecurring production	1.500	1.500	1.500
Support equipment	1.800	1.075	2.588
Other program costs	.355	.314	.355
Initial spares	1.100	1.100	1.730
Multi-year procurement	(.800)	(.900)	0
ALCM and LF/VF	.800	[1].563	.800
"Baseline" total	20.530	21.013	[2]25.270
Identified additions to baseline:			
Simulators	0	.340	[3].300
CED/CIP	0	.187	[3].150
Organic depot capability	0	.237	.400
Miscellaneous (first destination transportation, other)	0	.020	.100
Interim contractor support	0	.034	.263
Facilities improvement (contractor production)	0	.068	[3].070
Retrofit costs	0	.567	0

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SUMMARY COMPARISON OF ESTIMATES—Continued

[In billions of fiscal year 1981 dollars]

Cost category	SPO	Air Force independent estimate	OSD independent estimate
Manufacturing technology	0	0	[3].150
Baseline additions total		1.453	1.453
Total recommended baseline	20.530	22.466	26.703

[1] The Air Force team estimated the cost for only an external ALCM capability.
[2] Although the OSD report did not include a "Baseline" estimate of $25.27 billion, its assessment of potential added costs due to risk, when added to the SPO baseline, totals $25.27 billion.
[3] Although not included in the SPO baseline, these items are identified as related programs on the B-1B SAR.

SUMMARY COMPARISON OF COST ESTIMATES

[In billions of fiscal year 1981 and then-year dollars]

Description	SPO	Air Force independent estimate	OSD independent estimate
"Baseline" program: Fiscal year 1981 dollars	$20.53	$21.01	$25.27
"Baseline" program: Then-year dollars	29.23	28.45	([1])
Escalation indices as of	([2])	([3])	

[1] The OSD estimating team reviewed the B-1B costs only in terms of fiscal year 1981 dollars.
[2] May 1982.
[3] September 1981.

[The DOD comment follows:]

Baseline: The SPO baseline cost estimate for the B-1B is consistent with DODI 5000.33. Cost items excluded from the baseline are funded under separate budget line items.

Airframe: OSD estimates accepted ICA airframe costs which assumed a total learning loss. However, all contractors have regained a large portion of their original staffs (e.g., over 50 percent of Rockwell hires have previous B-1 program experience). All contractors are on or ahead of schedule. 24 percent of B-1B program is on contract. There is $6 billion of sunk cost from the B-1A program.

The ICA used a composite curve of 85 percent/82 percent for in-house airframe manufacturing and an 86 percent (average) for out-of-plant airframe manufacturing. However, the average learning curve experienced on previous bomber programs is 78 percent and the average learning curve experienced on all Air Force aircraft programs is 79 percent.

The Air Force estimate used the same basic methodology as the ICA with a 79 percent underlying learning curve. The resulting manhours required for manufacturing may then be further reduced due to limiting the possibility of aircraft/configuration changes. Historically, aircraft programs have shown that approximately 11 percent of the manufacturing manhours can be attributed to changes in configuration.

ECO budget: Changing an aircraft's configuration or its roles and missions are typically what drives a large ECO budget. The mature configuration of the B-1B, developed to counter Soviet air defenses projected for the 1990s, coupled with a strict change control procedure with the highest levels of government visibility lead us to believe that our ECO budget is adequate for this program.

The B-1B is technically mature and the configuration is stable. The roles for the aircraft are well-defined (nuclear, conventional, maritime). SECDEF is briefed monthly and he closely controls the weapon system configuration. With 24 percent of the total acquisition program contracts awarded, all contractors are currently on or below cost while on or ahead of schedule.

Support: OSD analysis of intermediate level support requirements were based on the following assumptions: the B-1B would be deployed at more bases than is currently anticipated; a higher number of peculair LRUs would be needed than currently programed; and technical data costs would be four times larger than what was experienced on the F-15 and F-16 programs. Each of these OSD assumptions overstated the program's requirements.

The Air Force is confident of its projections. Moreover, the AF believes that significant savings should accrue from the use of systems common with other AF air-

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craft (e.g., F-16 radar and B-52 Offensive Avionics Systems [OAS]), thus capitalizing on previously funded support bases.

Initial spares: The OSD estimate is based on the high side of historical parametric data. OSD used 12.6 percent of total flyaway cost to estimate the cost of initial spares vice 8 percent used by the SPO and the ICA. The 12.6 percent figure is even greater than that used for tactical fighter aircraft that have a higher utilization rate and greater mobility commitment.

Additions: The Air Force has made a firm commitment to the configuration of the B-1B aircraft. While there will no doubt be changes to the B-1B configuration at some time during its expected 30 year operational life, there are no changes anticipated in the near term. In addition, the Deputy Secretary of Defense has directed that no changes to the B-1B's configuration will be made without his specific prior approval. His memorandum (4 Nov 81) directed simulators, MANTECH, Component Improvement Program (CIP), and Production Facility Improvements be accommodated within general Air Force funds programmed for these purposes. The Air Force has programmed adequate funds for these items. Organic depot maintenance will be accomplished within the $1.8B programmed in the baseline. Additionally, retrofit costs for ALCM carriage for the first B-1Bs not so equipped are included in the baseline.

Expansion: The GAO includes $1.07B to $1.18B for potential costs if program scope is expanded. Of the list of options presented by the GAO only avionics standards is being pursued, with resultant savings of over $25M in acquisition costs, and a potential for even greater life cycle costs savings. The B-1B will be capable of performing the full spectrum of its assigned missions and will satisfy SAC's known, validated operational requirements for a modern strategic bomber without program expansion or changes in aircraft configuration.

Mr. EDWARDS. Thank you, Mr. Chairman.

LEARNING CURVE

Mr. ADDABBO. Mr. Secretary, The GAO reported that the SPO estimated that Lot II, which consisted of seven aircraft, would require 7,751,000 man hours to produce the airframes. The GAO reported the actual negotiated figure is 17 percent higher or 9,126,000 man hours.

How do these GAO figures actually affect your assumptions on the learning curve?

Dr. DELAUER. In a general sense, two things happened during the negotiations: one, the man hours per airframe and also the wage rate.

When negotiated, using the GAO reported figures for the seven aircraft, they say the number of hours was 9.1 million, which was 300,000 over our estimate; however, we reduced the hourly rate against those hours, so the total cost was actually under what was originally proposed.

Mr. ADDABBO. You do great things with figures.

Dr. DELAUER. That is the negotiated cost.

Mr. ADDABBO. The hours go up, but the rate of pay comes down.

Dr. DELAUER. Mr. Chairman, last year you told me to get that stuff on contract and come back and talk to you. You kept telling me it was just a proposal last year. We got it on contract this year.

Mr. ADDABBO. The negotiated price for producing Lot II airframes exceeded the SPO estimate in the baseline by $12.7 million. Is the baseline being increased to reflect this fact or will you make reductions other places and chop some other wages down?

Dr. DELAUER. I think there is a slight difference there. One was not a SPO estimate. I think you will find what it was was the SPOs opening negotiating position

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Mr. ADDABBO. Was the SPO estimate in the baseline exceeded by $12.7 million?

General RUSS. It starts out with 7.7 million hours. That is the SPO's going-in position to negotiate. That is not their cost estimate, but that is their going-in position. They don't tell anybody that it is not their cost estimate because if they did they would give away their negotiating position.

The real estimate was 8.8. That was their real estimate against which they figured their dollars.

Using the figures from the GAO report, the GAO says it was negotiated for 9.1 million and that is a reported increase in man-hours, but they got the man-hours at a ten percent reduced hourly rate. Therefore, overall they ended up saving about $21 million.

Dr. DELAUER. What was the contractor's going-in position, do you remember?

General RUSS. Rockwell International initially submitted 9,139,260 man-hours of manufacturing labor in their contract proposal for the seven aircraft contained in Lot Ii. However, the final number of man-hours contractually agreed to with the Air Force totalled 8,499,512.

Mr. ADDABBO. Mr. Murtha?

Mr. MURTHA. Mr. Secretary, I agree that what the Air Force did made sense. You took the simulators out of the program. That makes complete sense. I don't understand about the accounting procedures

In my mind I don't see why you changed the accounting and why it is different now than it was in the old programs.

Dr. DELAUER. It is——

SIMULATORS FOR B-1

Mr. MURTHA. The simulators used to be included in the program's, cost, along with everything else.

Now it makes sense to have taken them away from the prime contractor. That makes sense.

Why did you change the accounting?

General RUSS. It is awkward I agree, Mr. Murtha. That is why when we put it in the Selected Acquisition Report we identified it, put an asterisk by it and said this is different than we did it before. It is just the people managing those parts if money who no longer had authority to manage that part of the money.

It probably ought to be changed and highlighted in a different manner. This is the first program that came through. The decision was made to make sure we didn't hide anything and show people where it was; so we said put it in there, put an asterisk on it, and we will highlight it to everyone. Administratively maybe we ought to do it differently.

Mr. MURTHA. Why isn't it included in the overall cost? All of us, as you know, are concerned about this figure for two reasons. One is, if you don't go over it, you are going to have airplanes flying without the appropriate equipment.

I think about the Falkland Islands where they had ships that didn't have everything they needed.

I don't know how you eliminate that problem. Obviously we want to have the best airplanes we can get in the air with all needed equipment if we are going to build them.

I just worry. We worry about that $20.5 billion. I am afraid we are fudging the figures and not building an airplane that will do the job.

General RUSS. Let me say when we developed the $20.5 billion, we did not know what our training concept would be. We did not know initially where we would base them and how many simulators we would need. There are various ways to do the training, as you know.

You can make weapon system trainers; we didn't know how that was going to fit. We said to ourselves, let's allocate a certain amount of money which we think is reasonable—and that amount was $300 million—and go out and do a study to determine how we were going to do this training. That is what we are doing right now.

It is logically and accurately a part of the B–1B program. We recognize that, but it is not included in the $20.5 billion. We tried to highlight that. If we had had more time before we came up with the $20.5 billion and recognized the $300 million, we would probably have said $20.8 billion, but we didn't at the time.

Mr. MURTHA. Do you still think you are going to be able to do it with the $20.5 billion and have the airplane the Air Force would like to have in the air?

General RUSS. Sir, I am confident. If there is any program I see—and I run about 240 of them—this program probably has better management and more people watching it from day to day than any program I have ever seen.

When the Secretary of Defense sits down and biweekly goes through hundreds of curves that Colonel Evatt shows him and Dr. DeLauer goes through them and Mr. Jones goes through them, and everybody underneath goes through them, I think they are getting as much management attention as any program we have going.

Mr. MURTHA. I know the Secretary has given his personal commitment. What I am worried about though is the airplane itself. You are saying you will get under the $20.5 billion. But will we have the most modern avionics, the best? Is it going to be the best?

You will not come back two or three years from now and put new wings on it?

GENERAL RUSS. Sir, we are not going to produce an airplane that is not capable of doing the mission. We are convinced what we are putting in that airplane, in the $20.5 billion, is what is needed. It is the best equipment we have available.

We are confident we can do it.

Mr. MURTHA. So far as the Air Force is concerned, you are not leaving anything out of this airplane which would jeopardize its mission?

It will be able to get through and deliver on target.

General RUSS. We are confident that it is a super airplane.

Mr. MURTHA. You are not answering me.

Dr. DELAUER. The answer is yes, it will do the mission as has been promised, for both this airplane and the ATB. We will be able to have base escape, hardness en route, survivability en route be-

cause of being hard; we will have the ability to attack at low level with all the capability, terrain cleearance, target assessment, ECM to protect the airplane, navigate at night, all weather.

All those things, with its range and capability. That will be the airplane that will be delivered from day one.

Mr. MURTHA. One of the things I was concerned about last year, of course, was slippage of the ATB, as you know.

The other thing was that if you come up with a figure, as the Secretary did, that he may make a bad estimate.

I am the kind of guy who would rather go back, change the estimate, increase the price, and put extra equipment in the airplane to make sure it is right.

HARDNESS

For instance, hardness. I didn't think that was part of the original——

Dr. DELAUER. Absolutely, it was part of the B-1B. It had to be. That is the weakness of the B-52s. That is the problem with the B-52. There are two things: Base escape and en route hardness.

Mr. MURTHA. In other words, it can't get off the ground fast enough and is not hard enough?

Dr. DELAUER. For EMP, particularly.

Mr. MURTHA. At this point you haven't come up with anything new where you would have to change it?

I assume you would come back to the Congress, if there was a breakthrough of some sort, and even though it was going to increase price, you wouldn't hesitate to come back and say yes, we found something. This will cost more. We want to put this on the airplane as we build them?

Dr. DELAUER. Absolutely.

Mr. MURTHA. I yield to the gentleman from Florida.

DIFFERING ESTIMATES

Mr. CHAPPELL. Dr. DeLauer, let me just review this.

You stated Mr. Carlucci did review the ICA and OSD estimates before he issued the 4 November 1981 memorandum?

Dr. DELAUER. Yes, sir.

Mr. CHAPPELL. Did the Air Force ICA or OSD estimate give any credit for previous B-1 activities?

Dr. DELAUER. It gave little credit for the fact that there was tooling involved; we could use it; it gave no credit for the fact——

Mr. CHAPPELL. I am talking about the Air Force ICA or OSD. Did they give any credit for previous B-1 activities?

Dr. DELAUER. Both estimates gave very little, if any.

Mr. CHAPPELL. Did they assume a total learning curve?

Dr. DELAUER. No, it was different than the one that the Secretary accepted. The learning curve both in the OSD independent study and I guess the—do you have the Air Force one?

The Air Force ICA and the OSD were the same, but the SPDs was different. For instance, I think these are fairly accurate.

The Air Force ICA was 84 percent. 79 for the Secretary (and SPO) and it was 84 percent with OSD. OSD and the Air Force used an 84 percent learning curve.

The SPO used 79, and that is the one that was decided upon.

Mr. CHAPPELL. You actually contracted it lower than that? The contractor says it will be even lower than that?

Dr. DELAUER. We contracted at our budget estimate costs. The contractor says he can do 73.

Mr. CHAPPELL. What, essentially, did the OSD consider in developing support costs? Did they use the correct number of bases, for example.

Dr. DELAUER. I have to ask someone that. They used seven and it should have been four.

Mr. CHAPPELL. Did they use the correct number of LRUs?

Dr. DELAUER. There was a difference there too, Mr. Chappell. I can get you that for the record.

[The information follows:]

The OSD cost analysis used a conservative number of line replaceable units (LRUs) when developing their estimate of the B-1B support costs. In their approach to estimating these costs, the OSD analysts assumed a larger number of LRU's to be new and peculiar to the B-1 than was assumed by the Air Force. In addition, the OSD cost analyst did not have the same level of detail available as the B-1B Program Office and therefore used a more generic parametric method based on previous acquisition programs. Support costs are heavily influenced by the number of LRUs requiring individual test stations/procedures. In establishing their estimate regarding B-1B support costs, OSD analysts based their calculations on approximately 30 percent more LRUs/test procedures than are applicable.

Mr. CHAPPELL. What is that?

Dr. DELAUER. The line replaceable unit. What you have to use to keep it going.

Mr. CHAPPELL. What maintenance concept was used?

Dr. DELAUER. The answer from the staff is that the OSD estimate used a standard three tier. What the Air Force is proposing for the B-1 is a mix of two and three tier support which is a lower cost.

Mr. CHAPPELL. That is the effect of it, lower cost?

Dr. DELAUER. Yes.

Mr. CHAPPELL. Is this the same maintenance concept the Air Force intends to use?

Dr. DELAUER. The one in the SPO is what we intend to use.

Mr. CHAPPELL. They were talking about a three tier. You will use a mix of two and a three?

Dr. DELAUER. That is right, two and three in combination.

TECHNICAL ORDER PAGES

Mr. CHAPPELL. Let me ask about the GAO report on your technical order.

Dr. DELAUER. They are talking about the technical order pages.

Mr. CHAPPELL. That was a substantial cost, wasn't it?

Dr. DELAUER. What they tell me is that in the F-15, F-16, we now have cost experience of 200 to 250 dollars a page. The estimate used a thousand dollars a page.

Mr. CHAPPELL. Which is $750 more than what you consider to be reasonable?

Dr. DELAUER. And what we are now experiencing.

Mr. CHAPPELL. And what you are actually experiencing?

Dr. DELAUER. That is right.

Mr. CHAPPELL. So they were almost four times more than the actual costs?

Dr. DELAUER. Yes.

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Mr. MURTHA. What was your cost experience?

Dr. DELAUER. $250 a page. That is on the F-15, F-16.

Mr. CHAPPELL. That is round figures?

Dr. DELAUER. That is right. It was all text plus diagrams.

Mr. CHAPPELL. This question has been asked a different way. On this baseline cost estimate, is the B-1B baseline program as described to Congress consistent with these directives?

Dr. DELAUER. Yes, sir.

Mr. CHAPPELL. With the exception of the simulator? There you say that is now?

Dr. DELAUER. The $20.5 billion that the Secretary approved, we have described that program to you in detail.

Mr. CHAPPELL. You said it will not cost over $300 million?

General RUSS. $300 million for the simulator. That is in 1981 dollars.

Mr. CHAPPELL. What about the certification of this bomber for nuclear weapons? How much nuclear certification is actually included in the program?

My understanding is, you have a full nuclear certification of two nuclear weapons and the SRAM, is that correct?

General RUSS. Plus cruise missiles. They will be included in the baseline.

TESTING PROGRAM

Mr. CHAPPELL. GAO also had something to say about the testing program; they said it was inadequate. It is my understanding they are claiming it should have been up around 15 or 16 hundred hours. You determined it should be a thousand?

Dr. DELAUER. That is right.

Mr. CHAPPELL. Who made that determination? Why do you think a thousand hours of testing is proper?

Dr. DELAUER. One of the original questions was, is there anything left from the B-1A?

The thing that has been left from the B-1A is the tremendous amount of testing that has been done on the B-1A, particularly structural testing and testing that has to do with some of the flight characteristics, which is going to be applicable to this.

Let me give you some examples.

In the B-1A, we had 1895 flight tests hours, 6214 engine flight hours, 23,688 engine ground test hours and 168 mission simulator hours.

Those were all done in the previous program on the first four airplanes.

Mr. CHAPPELL. Have you learned—kind of streamlined your testing program too?

My understanding is you used to go out prepared to test one piece of equipment. If you found it down and couldn't go forward with that testing, you returned to base and accomplished no actual testing on that flight.

Now your procedure is, you go up on the flight, test several things on each flight so if you can't do one thing, you can do another. This way you don't waste time flying around the base to burn off fuel so you can land. Also, you accomplish test work which

makes your testing program much more efficient. Isn't that right, General?

General RUSS. That is absolutely true.

In any program, when you first start flying the airplane, as you know, you have to explore the flight envelope.

Therefore, there are certain points that have to be examined. Those critical first flights have to pass milestones before you can proceed on to the avionics testing and the further testing.

We have done all of that in the B–1A program so the vast majoirty of the testing that has to be done is avionics testing. We did some 1300 hours of avionics testing in the initial program, in the B–1A program. Therefore, we believe that the testing we are going to do in the B–1B program will allow us to do multiple things on test sorties.

You may take off and do four or five things. If one thing doesn't work, you just test the rest of the things on that sortie.

You don't have to come back and start all over again.

Mr. CHAPPELL. If you were coming back, you would have to burn off fuel and waste time before you could get on the ground?

General RUSS. Absolutely.

Mr. MURTHA. How about hardening? Is that included in this testing, the numbers we have here?

General RUSS. You don't test nuclear hardening in flight. The nuclear hardening is first designed into the system, into the subcomponents, the cables, the boxes, the shielding. Then the subcomponents are tested on the ground to nuclear hardening.

Then the airplane is built.

Mr. MURTHA. Is that included in it?

General RUSS. Yes, all that is included in the total testing. Then it is all put together. We have no way of testing it in the air.

Mr. CHAPPELL. Getting back to the flight testing, a much higher figure was used by the GAO in its determination or in its criticism.

How confident are you that the thousand is adequate and who set the thousand as the proper testing?

Dr. DELAUER. The thousand was set at the SPO recommendation after he reviewed the previous amount of testing being done on the air frame and the fact that the avionics systems is the same one—the advanced avionics system that is in the B–52.

Mr. CHAPPELL. So the thousand is what you use. You feel that is the right figure?

General, I suppose if I asked you the question based upon your professional opinion, your experience, would you say that a thousand is adequate?

General RUSS. I think a thousand is adequate. Let me say in addition to the thousand, in the baseline program, there is another 160 hours of flight testing for ALCM. When you carry the ALCM, you can also do avionics testing. In essence, we don't really have a thousand. We have 1,160 flight test hours in there. A thousand certainly is sufficient to do the job if we manage it right.

MULTIYEAR PROCUREMENT CONTRACTING

Mr. CHAPPELL. The GAO criticized also your use of multi-year contracting. I believe you have that?

Dr. DeLauer. In the cost there is a saving attributed to going multi-year.

Mr. Chappell. My recollection is there are six criteria you have to meet to make it eligible for multi-year project or contracts.

Does this program meet all of these criteria?

Dr. DeLauer. It will when the time comes to go multi-year, which will be next year sometime.

Mr. Chappell. One is benefit to the government.

Dr. DeLauer. No question about that.

Mr. Chappell. Stability of requirements.

Dr. DeLauer. We are stable.

Mr. Chappell. The funding stability, you feel now your appearance has made that——

Dr. DeLauer. That is up to you.

Mr. Chappell. All right. You have a stable configuration?

Dr. DeLauer. Absolutely.

Mr. Chappell. You have a cost confidence now?

Dr. DeLauer. We have fixed price contracts and options for the follow-on buy.

Mr. Chappell. You have confidence in the contractor's capability?

Dr. DeLauer. And we will at that time.

Mr. Chappell. Have they been performing?

Dr. DeLauer. We will at the time they perform.

Mr. Chappell. Are you satisfied with the contractor at this point?

Dr. DeLauer. They are under running.

Mr. Chappell. Under running? Everybody is ahead of schedule and under cost?

Dr. DeLauer. They are delivering drawings ahead of time. They have their tooling in ahead of time, and at this time we expect them to have so many manufactured parts. We have a higher number of manufactured parts off production tooling. They are ahead of schedule and under cost. They expect to make some money on this program. I have talked to them about it.

Mr. Dicks. Isn't it true, though—you keep saying at that time. You already have pre-judged it. You will go to multi-year no matter what?

Dr. DeLauer. No; we are going to go to multi-year if we get the $800 million savings.

Mr. Dicks. $800 million. the OSD estimate gives you nothing for multi-year. The point I want to make is there is a $2.4 billion R and D program. Part of the multi-year criteria is that you are supposed to have completed your RDT and E program. How are you going to go to multi-year when you haven't done that?

Dr. DeLauer. Mr. Dicks, it is a question of being as far through the RDT and E to get a stable program. We have a multi-year on the F-16. It is still in RDT and E.

Mr. Dicks. When are you going to complete that?

Dr. DeLauer. Probably never completely. It hasn't been completed on an airplane yet. we still have it on the B-52s. It is a question of when—remember, multi-year is a production buy. It is a production article buy. What you have to do is be stable enough to know that in that period for the deployment we are going to build at a

rate of 4 per month. Say we put 90 or 60 on multi-year. Are those 60 configurations going to be in good enough shape to have multi-year so you can provide the savings? There will be R and D going on all the time, so there is no stop on R and D.

Mr. CHAPPELL. When you say the contractor is performing satisfactorily, you mean the subs, the subs are on time? I know Mr. Dicks would want to know if Boeing is on time.

Dr. DELAUER. They are pretty good. They were the last one to get on contract. Our toughest negotiations were with Boeing.

Mr. DICKS. They were pre-occupied with other things?

Dr. DELAUER. They have enough people to worry about this.

Mr. CHAPPELL. I think you alluded to an answer to this question. What does multi-year procurement for the B-1 program equate to in terms of out year avoided outlays considering discounting?

Dr. DELAUER. $800 million is the cost savings in outlays.

General RUSS. I don't know about discounting and would like to expand for the record on that point.

[The information follows:]

The Department of Defense is firmly committed to a vigorous multiyear contracting effort to achieve a projected $800 million (fiscal year 1981 dollars) in total savings. It is anticipated that this savings, which has been figured into the $20.5 billion (fiscal year 1981 dollars) baseline cost estimate, will result from reduced program outlays, a lesser inflation impact, and significant savings by having the subvendors use economic order quantities for materials, parts, etc.

The multiyear savings projected in early 1981 were an estimate made primarily based upon F-16 and cruise missile experience. Draft Requests for Proposals have been sent to the B-1B contractors soliciting their multiyear savings profiles. The preliminary contractor estimates are just being received.

As a result, the Air Force is preparing its multiyear justification package to be forwarded to Congress. That package will contain a present value analysis of the expenditure profile, which will clarify your concerns about discounting.

Mr. CHAPPELL. Was the Air Force directed to vigorously pursue multi-year procurement on the B-1B program?

Dr. DELAUER. Yes, the Deputy Secretary said we will do it and those are the toughest instructions you can get.

ENGINEERING CHANGE ORDERS

Mr. CHAPPELL. What about the budget? Wouldn't the stringent OSD controls seem to limit ECOs (engineering change orders) and thus justify the lower estimate?

Dr. DELAUER. We have 6 percent in the program right now for ECOs. Normally 10 percent is about what you experience on programs.

Many things can cause engineering change orders. One, you haven't done a sufficient amount of R and D or configuration decisions and configuration control when you go into production. The cost for engineering change orders come when you have to change the production article, not so much when you have to change the drawings. There are other things as well.

TRESTLE TEST

Mr. CHAPPELL. Let's go back to EMP. The staff mentioned that that is not in the baseline. There is a good reason for it. Will you explain that?

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Dr. DeLauer. What is not in the baseline is the trestle test at Albuquerque.

Mr. Chappell. Why can't you use that?

Dr. DeLauer. The trestle test is not a proof test. The trestle is a diagnostic instrument. The trestle has been used over the years for the purpose of ascertaining potential weaknesses caused by EMP. The trestle does not have the capability ———, which you will experience, in fact, but what it does show you is the fact that a particular design has some weaknesses.

We have used it over the years to determine how you would design an article that would be nuclear hardened. Those are things like shielding, how you perforate bulkheads, how you handle this, how you relate one piece of equipment to the other.

Now, when it comes to defining and ascertaining how hard a particular subsystem or component is, you have to do that at the subsystem business. The testing for that is not done at trestle, it is done at the place where the people are building the subsystem. That is included in the cost.

Mr. Chappell. It is in the cost?

Dr. DeLauer. It is in the cost. What is not in the cost is a trestle test. We are not even attempting to put the B-1 in a trestle.

Mr. Chappell. You can't get anything from it?

Dr. DeLauer. What you could get out of it later on maybe after you operated a while to see whether or not there is deterioration as a consequence of operating. It is not even a proof test ———.

Mr. Chappell. Are there any component subsystem developments that would not be applicable to the multi-year procurement procedures; in other words, is the B-1B radar a new system or an adaptation of the F-16 radar?

Dr. DeLauer. It is an adaptation of the F-16. The F-16 is on multi-year right now. The INS is going to be on the OAS, isn't it? That is part of the F-16. That is on multi-year right now.

General Russ. There may be some, but I can't think of any right now. It will be similar to what we did with the F-16. If we find those changes or those factors that we don't have high enough confidence it, in their stability, then we won't include them in the multi-year. We will have a separate contract for those. It doesn't impinge on our savings.

Mr. Chappell. My recollection is that the GAO listed about six or seven different items that they thought should go in here and have not. I don't know if I can find those.

This identifies additions to the baseline. We talked about simulators. Did we talk about CED and CIP?

General Russ. No, we have not.

CED AND CIP

Mr. Chappell. What about that? Are you going to put the CED in? What is CED and CIP?

General Russ. It takes the engine and improves the engine.

Mr. Chappell. I thought you covered that.

Dr. DeLauer. I did, as a separate line item.

Mr. Chappell. The organic depot capability.

Dr. DeLauer. That is not a separate line item.

Mr. CHAPPELL. It is not in the baseline. My understanding was it was not necessary, not normally put in the baseline. Am I correct or not?

Colonel EVATT. Follow-on activities relative to organic depot—the basic cost of organic depot capability is in the B-1B baseline, and it is not an added cost.

Mr. CHAPPELL. Why is that?

Colonel EVATT. Because it was fully funded in that area, to the best of my knowledge.

Mr. CHAPPELL. They list miscellaneous and first destination transportation and others. Where do you take delivery? Where does the government take delivery of the aircraft?

General RUSS. At the plant, sir.

Mr. CHAPPELL. Is that what they are talking about?

General RUSS. What they are talking about is when they pick up the airplane, who pays the flight from the plant to the Air Force base. We believe the Air Force ought to do that because we have pilots and it is cheaper for us to do it than have the contractor do it.

Mr. CHAPPELL. So you will pick it up. Therefore, it is not properly in the baseline?

Dr. DELAUER. But there is no additional cost, either. It is not an addition to the baseline.

General RUSS. It is 3400 money or normal flying time. The pilot goes out.

Mr. CHAPPELL. Is that the same procedure you use with other programs?

General RUSS. Every one.

Mr. CHAPPELL. You don't put those as additions to the baseline?

Dr. DELAUER. No.

Mr. CHAPPELL. How about the interim contractor support?

Dr. DELAUER. That is the one I covered also in another item that we found in a different line.

Mr. CHAPPELL. Did the SPO estimate originally include the organic support costs?

Dr. DELAUER. I don't believe so.

Mr. CHAPPELL. The original.

General RUSS. It did not.

Colonel EVATT. Sir, organic depot support capability has always been in the baseline estimate. The interim contractor support, however, is funded through AFLC by Air Force directive, and it is not funded through the program office.

Mr. CHAPPELL. Is that the same procedure you will follow in other programs?

Colonel EVATT. Absolutely, sir.

Dr. DELAUER. I would guess GAO is looking for a big number.

Mr. CHAPPELL. What about retrofit costs?

Colonel EVATT. Costs to retrofit the aircraft for cruise missile carriage for the first few that don't have it is included in the baseline costs. It is part of the follow-on, Class V mod at a future date.

Mr. CHAPPELL. So you followed the same procedure you followed in other programs?

Colonel EVATT. Yes, sir.

Mr. CHAPPELL. Manufacturing technology?

Colonel EVATT. That is not a baseline cost in any program. It is a separate program element set up specifically to fund manufacturing technology and facilities activity.

Mr. CHAPPELL. You don't include them in other programs?

Dr. DELAUER. No.

Mr. CHAPPELL. So you used the same procedure in this one that you used in your other programs?

Dr. DELAUER. Absolutely, except for the simulators.

Mr. CHAPPELL. That is a new one.

How does the Air Force make their independent estimate? Is that somebody's idea of what it will cost?

Dr. DELAUER. They have a pricing organization, a costing organization, put a team together. In this case, they went from bottoms up. They did not do them parametrically. They looked for all the elements of it and priced them out. They used some estimates that the contractor proposed in their proposals, which is slightly different from the way OSD does it. OSD tends to be more parametric.

Mr. CHAPPELL. What does that mean?

Dr. DELAUER. History shows us air frames cost so many dollars a pound. This airplane will weigh this much, so the number for the air frame costs will be that many pounds times that amount of cost per pound. That is a parametric approach.

Mr. CHAPPELL. When you approach it item by item or direct costing, you find it is actually less per pound?

Dr. DELAUER. In some cases. In some cases it will be less. In some cases it may be more. In the case of the B-1, remember that the engines and the avionics have been under development on different programs.

There are actual numbers, prices on those items, that you would not have if you did it parametrically. I think there is where the biggest changes are.

Mr. CHAPPELL. Mr. Dicks?

Mr. DICKS. I think Mr. Young is next.

Mr. CHAPPELL. Mr. Young?

Mr. YOUNG. Thank you very much, Mr. Chairman.

DEPUTY SECRETARY CARLUCCI'S LETTER

Dr. DeLauer, in the conversations we have had this afternoon about what should be included in the baseline and what should not be and is the B-1 program different than some other program, if I remember correctly, last year sometime, Deputy Secretary Carlucci sent a letter describing what the new program would be. Am I correct on that?

Dr. DELAUER. That is right.

Mr. YOUNG. I tried to locate a copy of that letter. I cannot locate it. Could you provide a copy for us?

Dr. DELAUER. I understand you want the one on the B-1?

Mr. YOUNG. It is the one on the B-1. If I remember correctly, there is something in that letter that would indicate to us that this was not just for the B-1 but this was going to be OSD's policy.

Dr. DELAUER. There are instructions out on how you handle certain of these elements in DOD instructions. I will try to get those

for you. We will try to put together the things apropos to your question.

Mr. YOUNG. Without objection, we will have them placed in the record.

[The information follows:]

THE DEPUTY SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

4 November 1981

MEMORANDUM FOR THE SECRETARY OF THE AIR FORCE

SUBJECT: B-1 Program

I have reviewed the Air Force and CAIG estimates of B-1 acquisition costs. To ensure that the program does not exceed its $20.5B budget (in FY81 dollars, including $.8B for internal and external cruise missile carriage, as summarized in the attached table), I am directing that the following steps be taken:

1. Besides providing internal and external cruise missile carriage, no additions will be made to the B-1 program outside the acquisition and operating concepts on which the POM was based.

2. The aircraft design consistent with paragraph 1 will be controlled so as not to exceed the presently programmed 6% ECO factor. If for any reason this becomes impossible, other features of the B-1 program will be modified to offset additional costs.

3. Simulators for the B-1 program will be funded within the simulator program described in the Air Force memorandum of November 4, 1981.

4. The development of an organic depot maintenance support capability will be completed within the $1.8B the B-1 program manager has presently projected for support equipment.

5. The Air Force should proceed with a vigorous multi-year contracting program to achieve the $.8B savings presently projected.

6. Interim contractor support, if needed until an organic intermediate and depot maintenance capability is available, will be paid for out of AFSC/AFLC funds provided for this purpose.

7. MANTECH, an Engine Component Improvement Program and Production Facility Improvements for B-1 will be accommodated within general Air Force funds programmed for these purposes.

A program management plan outlining your ideas on how best to achieve cost and schedule objectives for the B-1 program, including strict change control procedures, streamlined management, and prompt reporting of programmatic issues should be submitted to me through the Under Secretary of Defense for Research and Engineering within 30 days. Particular management attention will be paid to limiting cost growth in the airframe, support equipment, initial spares, and avionics. Quarterly reports will be sent to me describing progress achieved in carrying out the B-1 program within its budgeted cost. No change to the presently planned B-1 acquisition program or major changes in configuration will be made without my approval.

It is vitally important that we have an effective contract for this program, followed up by vigorous program management. I am asking Under Secretary DeLauer and General Counsel Taft to review for me the contract negotiating process on a continuing basis. When contract negotiations commence, I would like bi-weekly reports on the progress of these negotiations with emphasis on any problems you are experiencing.

Frank C. Carlucci

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IOC OF THE B-1

Mr. YOUNG. I would like to know when the first B-1B squadron will be ready to stand full nuclear alert.

Dr. DELAUER. ———.

Mr. YOUNG. Is that assuming a combat readiness rating of C-1 or C-2?

Dr. DELAUER. ———.

General RUSS. It will be passing a certification. They will probably not have all the war reserve spares kits (WRSK) and some other gear for all their missions. They will be fully combat ready as far as a nuclear role is concerned.

Mr. YOUNG. They will have the nuclear certification by that time?

General RUSS. Yes sir, on those two bombs that we identified plus the SRAM and the ALCM will follow.

Mr. YOUNG. Would you describe the nuclear certification test plan?

General RUSS. Colonel Evatt?

Colonel EVATT. The intention is to fully certify two gravity weapons. At this time the Strategic Air Command has asked the B83 and B61 be the two gravity weapons. They will be tested throughout the useful portion of the operational envelope.

The reason I say that is because in the early part of the B-1 prototype program we had mach 2 capability and will not be certifying weapons at that speed because the airplane will no longer be employed at those speeds.

Following the gravity weapons, sir, we will begin certification of the SRAM at all altitudes and air speeds at which it is anticipated they will be used.

Dr. DELAUER. Are you asking what does the certification entail? Can they carry them, launch them?

Mr. YOUNG. When would you, after you receive the aircraft, begin the certification testing and how long would it take? What is involved?

Colonel EVATT. The certification testing begins next summer on B-1A aircraft number 2. A great deal of the certification will be completed on that. The final portions of the certification, which can only be completed on a production equivalent aircraft, will be completed on B-1B aircraft number 1. That activity will begin shortly after its delivery to the Air Force in the spring of 1985. So, by ———

Dr. DELAUER. ——— of the squadron IOC.

Mr. YOUNG. So the ——— date you gave me earlier is the date for this entire squadron to be nuclear certified?

Colonel EVATT. Yes, sir.

Mr. YOUNG. Again, how long does it take to put the first B-1 through the certification program?

Colonel EVATT. Sir, the certification process, you do it on production aircraft and it counts for all succeeding production aircraft unless there is some major modification that would require recertification.

Mr. YOUNG. Is this done after you pick up the aircraft from the contractor?

Colonel EVATT. We actually take the aircraft. Part of the testing for certification is to take the production aircraft to Albuquerque and let the nuclear community have it to run checks on. Once they are satisfied of the safety of the aircraft, they return it to us. That completes that portion. Some is done by engineering analysis by the contractor. Some portions——

Mr. YOUNG. Does the contractor do that before you take possession of the aircraft?

Colonel EVATT. Yes, sir. It is an engineering analysis. He doesn't even have to have the aircraft there to do it.

Mr. YOUNG. The Albuquerque one is done after it is delivered to the Air Force?

Colonel EVATT. That is correct. Then we do fly around where we put weapons in the weapons bays and measure acoustic vibration, thermal effects that are present when the weapons are in the bay, and all that constitutes a certification.

Mr. YOUNG. There are some who believe that the 1986 date is not a real date, they believe that is really when you are going to have your 15th aircraft delivered, but the squadron will not be nuclear, will not have its nuclear certification, and will just be an actual delivery of 15 airplanes.

Could you comment on that so I am satisfied that when this argument is raised, I will be able to debate it?

General RUSS. Our response is our plan is to have it fully certified, 15 airplanes by that time. Right now we are ahead of schedule. If we maintain that schedule, we will beat that date.

Mr. YOUNG. You are ahead of schedule on all facets? Your air frame is ahead of schedule? Your engines are ahead of schedule?

General RUSS. Yes, sir. We think we will roll out the first aircraft at least four to five months ahead of time.

Mr. YOUNG. If we take the position that ——— is when we are going to have an operational squadron, then we are on solid ground?

General RUSS. We signed up for ———, sir. We don't want to give any ground on that right yet. You never know when somebody will go on strike or something will happen that is unforeseen.

Certainly if things go as smoothly as they have been going, we ought to be able to make that with no difficulty.

Mr. YOUNG. What about conventional weapon certification? How do you do that? How long will that take?

General RUSS. That doesn't take nearly as long as the nuclear certification. Our intent now is to certify two different types of conventional weapons. One is a standard bomb, an MK series bomb. The other is a mine, an aerial mine which we can use for anti-ship purposes.

We go through similar sorts of tests in that we carry them in the bomb bay, we check the thermal, the vibration, we check the clearance, we eject them from the airplane, which we call Seek Eagle tests, to see whether they come off, how they work, and then we actually do some bombing.

Mr. YOUNG. And these first 15 airplanes will all be certified conventionally and nuclear by that date? I am really trying to get you to pin down this date in as many ways as you can.

General RUSS. Those two conventional weapons will be certified. Every time you change and put a new conventional weapon on, if it is a different shape, size, you have to certify that again to make sure it is safe. They run load checks, free fall checks.

Dr. DELAUER. I think we ought to clean up a point, Mr. Young. You are certified by type. It is not like an acceptance check of the particular article.

Mr. YOUNG. Of each aircraft.

Dr. DELAUER. Of each aircraft type. It is certified by type, and as pointed out, when we get the first production B-1B, which is the first article, that will certify that aircraft type and we will proceed.

Of course, we have to certify with the cruise missile on a later airplane because we don't have the ones modified that way until late in the program. When the squadron is delivered, it has all been certified.

Mr. YOUNG. When the squadron is delivered, what about the crews? Are you going to have the crews prepared? Not only the flight crews, but the maintenance crews? Will they be prepared, checked out? Will they have whatever they require for nuclear weapons use?

General RUSS. The ground crews will all be cleared for the nuclear weapons and trained. The air crews will be cleared and certified on all the weapons and the delivery parameters. There will be, like we said, interim contractor support, primarily for some of the avionics work for the aircraft, which will not all be blue suit. Full blue suit will not occur until about 1988 as we train our people on the ground. But the certification people, the capability to go to war is there.

Mr. YOUNG. By 1988 how many B-1Bs will you have? Will you have 100 of them? Is that still the target?

Dr. DELAUER. That is the target.

Mr. YOUNG. How many of those 100 will you have by 1988?

General RUSS. All of them, sir.

Mr. YOUNG. Will you have crews for all of them?

General RUSS. Yes, sir. We have them waiting in line right now wanting to get into the program.

Mr. YOUNG. This is 1982. The first squadron is due in ———. 1988 we are talking about six years from now. We are getting close to 1990 or 1991, which is a date that we probably can't talk about here. We should talk about it in a later session this afternoon. Those dates are coming close together.

General RUSS. I think you are comparing the termination of one program and the start of another. One program is fully equipped and finished and the other program is just getting its first airplane. If you want to talk start-to-start or finish-to-finish——

Mr. YOUNG. I understand that. I didn't think we could do it here. I would like to talk about finish-to-finish.

Dr. DELAUER. We can give you that later. We will be able to give you the exact dates.

Mr. YOUNG. We are ahead of schedule on the production and we are under cost. I would like to ask whether or not the government and ultimately the taxpayers will have any way to benefit in that under cost accomplishment.

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COST SHARING

Dr. DeLauer. Most of the contracts have a cost sharing such that they are under cost. We share that.

Mr. Young. So the fixed price still allows for that?

Dr. DeLauer. There is a sharing over target and a sharing under target.

General Russ. If they save $100 million, we think generally it is a 50-50 split.

Mr. Dicks. What if they go over?

Dr. DeLauer. 80-20 up to the ceiling, and then 100 percent for the contractor over the ceiling.

Mr. Dicks. What is the ceiling?

Dr. DeLauer. The ceiling is about 135 percent of target costs; not target price, target costs; 125 on target price.

Mr. Dicks. That is about what the OSD independent estimate said, 135 percent.

General Russ. I might say we are budgeted not for the total ceiling, but between target and ceiling, so we are budgeted above the lower level.

Dr. DeLauer. $20.5 billion handles above the contract target price.

Mr. Young. On October 6, 1981 our transcript shows General Allen was here, Lieutenant General Kelley Burke, Major General Marvin Patton, Major General William Usher, Brigadier General Richard Abel and Colonel Paul Kaminski.

Dr. DeLauer. Paul is the only one left.

Mr. Young. In the questions submitted for the record was this question:

Will the initial B-1 bombers delivered, be able to stand full SIOP alert or would they need additional time for such items as nuclear certification or structural fatigue testing?

The answer was:

The IOC for the B-1B is defined as the scheduling milestone when a total of 15 B-1Bs have been delivered to the Stragegic Air Command. At that time the squadron would be capable of standing SIOP alert duty. However, certain OT and E flight tests, complete nuclear certification, and additional air crew training requirements will still remain to be completed. Additional full-scale structural fatigue testing will not be necessary.

The next to the last sentence seems to be in a little bit of conflict with your answers to my questions.

General Russ. We will not have the ALCM capability at that point in time. That doesn't come in until sometime in 1988.

Mr. Young. You don't plan to use ALCM on the first 15?

General Russ. All B-1Bs will be ALCM capable. Some will need to be certified for ALCM. We will also want to certify other conventional types of weapons on those airplanes and certify the crews. That will not be done by IOC. We will have to do that subsequently.

Mr. Young. The extra time required there is for duties and requirements beyond the planned requirement for that first 15 aircraft?

Dr. DeLauer. That is right.

Mr. Young. So there is no conflict there?

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Dr. DELAUER. There is no conflict between those two.
Mr. YOUNG. Thank you very much.
Thank you, Mr. Chairman.
Mr. MURTHA (presiding). The gentleman from Washington?

INCREASED COSTS FOR WEAPONS

Mr. DICKS. Dr. DeLauer, I am deeply troubled about the way the Department is presenting weapons systems costs to the Congress. I wish I could take the Department's testimony as the full truth, but recent experience makes that difficult. We face serious and difficult budget problems. These problems will only increase in magnitude as the Administration pushes for a constitutional amendment for a balanced budget.

The Latta budget already calls for $44 billion in reductions below the Administration plan for defense in the next three years. Frankly, I think if anything, the number will grow. At the same time, weapons costs are skyrocketing. The total for major weapons systems included in the December 1981 SAR was a $148.4 billion increase. That is for the Air Force alone. Overall, the SAR was up $150 billion from the previous September to $454 billion. To that total, the Administration now wants to add a C-5 program that will cost $10 billion for acquisition alone.

Those of us in Congress are going to have to make tough choices. Do we go ahead with costly systems now even if it jeopardizes systems that could follow shortly and provide major capability improvements? Do we go ahead with the B-1 even if it jeopardizes the ATB? Should we buy the C-5 even if it effectively kills the C-17?

We also have to decide what we sacrifice in today's readiness. The House Armed Services Committee, for example, cut funding for B-52 modifications in order to get to the budget resolution numbers rather than impact the B-1. There is no way the Congress and the public we represent can make those decisions wisely unless the Executive Branch is forthright in presenting the real alternatives. That demands an honest presentation of cost. Frankly, I think the Department has been less than candid on the B-1.

Last week we had witnesses from GAO discuss the analysis done by independent evaluators both within the Air Force and in OSD. As you know, these analyses suggest the baseline of costs for the B-1 in 1981 dollars could be nearly $6 billion more than the $20.5 billion official figure. CBO estimates then year costs at $41 billion, $410 million per airplane.

I am pleased you are here before us today and are ready to discuss the specifics as you have of these different estimates and why you feel the $20.5 billion figure is still valid.

I look forward to getting into the details on this question. I would remind you that last year you testified that in 1981 dollar costs would be $19.7 billion. I am convinced we would never have seen these independent analyses or known of their existence without the persistence of GAO and this committee.

The GAO witnesses testified that they had a very difficult time getting these numbers and, in fact, had to threaten a lawsuit before these numbers were made available. They were never

presented to this committee, even though we asked for them repeatedly.

When this type of thing happens, we can't help but believe you have something to hide. That, in fact, the costs you presented are not accurate and you don't want us to find out until we are so far committed on the program it is too late to turn back.

I wonder how many other systems have had the independent cost analysis done on them that show much higher costs than the official line that we have not yet discovered. Until those of us on ths committee can be confident that there isn't relevant information being hidden, I think we are going to have to look at the Pentagon's cost figures in a very skeptical light. I hope that these hearings today will be a step in correcting this.

I want to go back to the basic numbers. Air frame, you have it at $9.885 billion, the Air Force independent analysis is $11.258, and so is the OSD independent analysis of $11.285. Just inverted on the last two numbers.

When you have the Air Force's own independent assessment and the OSD independent assessment that come up with a substantially higher number, how can you be so confident in the number that you originally presented to this committee?

Dr. DeLauer. Because the learning curve and the SPO's estimate is exactly what the Air Force has experienced on every single one of their——

Mr. Dicks. Why wouldn't the Air Force independent estimate then concur in that?

Dr. DeLauer. Beats me.

Mr. Dicks. Why would the OSD's independent estimate?

Dr. DeLauer. Beats me. Why should they take 84 percent?

Mr. Dicks. Why have these groups in being if nobody pays attention to what they say?

Dr. DeLauer. Mr. Dicks, the way we do these—let me jump down to the thing about how many independent cost estimates are taken. There are independent cost estimates for every single major program that comes to DSARC. When I review a program, I rely on the head of the CAIG to give me an independent cost estimate. The SPO cost people sit there as well. If there are differences, we resolve the differences.

The matter of learning curve, it turns out 84 percent is just about what you experience in engines. Notice the engine line isn't much different. The engines for all three of them are just about right. About 82 to 83 percent is what you expect to get in a mature engine program. It turns out there is like $100 million out of all the things, slightly different. OSD is a little bit lower. The other one is a little bit higher. So, the whole question of learning on engines is kind of agreed to.

Learning on air frame is a matter of judgment. The fact that we have experienced 79 percent on existing air frame programs—as a matter of fact, I have here a very excellent contractor in Seattle who has higher learning rates, better learning rates than this on existing programs there. I have the numbers. They run well under 79 percent.

So, I look at that and say look, by God, we are going to put Boeing's out there in front of people and make them work the problem.

You can quarrel with the judgment, but you can't quarrel with the honesty. I am telling you what we did. We used 79.

Mr. DICKS. Why wouldn't you make those other figures available when this committee and others asked for the CAIG and the Air Force independent estimate? Why did the GAO have to threaten a lawsuit before you came forward with these numbers?

Dr. DELAUER. Mr. Dicks, if you had asked for the numbers, I would have been glad to go over the numbers with you.

Mr. DICKS. Mr. Chairman, didn't this committee ask for these numbers last fall and last spring? We never got them, did we?

Mr. ADDABBO. We cancelled the B-1 hearings.

CBO LETTER

Mr. DICKS. We had a hearing scheduled. This committee couldn't get the numbers so we cancelled the hearing. That is why there is a credibility issue, Dr. DeLauer. I have a great regard for you personally, but there is a credibility problem here when we ask for these numbers and can't get them. GAO has to go in and beat you over the head for them.

Obviously the reason you don't want to give them out is because they show a much higher baseline number. They also show a bunch of things that were not included that probably should have been included in making a judgment about what the program is going to cost.

So, for those of us up here, obviously it looks like another effort to buy in, to come up here and tell us it will cost $200 million a plane and CBO now is telling us it is $400 million a plane, and these are incredible numbers that we are talking about.

Dr. DELAUER. Mr. Dicks, why don't you question CBO on the rationale for what they do? I can have an inflation rate of 12 percent a year compounded. I can get you any number you want. If I work it right, I can show you in the year 2000 we can spend the whole defense budget on one airplane. That is nonsense. You know it is nonsense.

Mr. DICKS. I would like to put the CBO letter in the record:

[The letter follows:]

CONGRESSIONAL BUDGET OFFICE
U.S. CONGRESS
WASHINGTON, D.C. 20515

Alice M. Rivlin
Director

July 27, 1982

The Honorable Joseph P. Addabbo
Chairman
Subcommittee on Defense
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

In response to your request, the Congressional Budget Office (CBO) has converted from constant to current prices two B-1 bomber cost estimates prepared within the Administration. These are the Administration's estimate for the B-1 in the Defense Department's Selected Acquisition Report of March 1982 and the Office of Secretary of Defense Cost Analysis Improvement Group (OSD CAIG) B-1 estimate found in GAO's recent B-1 briefing to the Defense Appropriations Subcommittee. As you requested, the current dollar estimates are based on specialized deflators for Air Force programs consistent with CBO's January 1982 economic assumptions. At the request of the Subcommittee staff, CBO has made an alternative calculation of the OSD CAIG estimate using more recent economic assumptions provided by the Air Force. The Air Force assumptions are lower than CBO's January 1982 assumptions by about 1 to 2 percent each year.

After applying CBO's inflation assumptions to the Administration's estimate, the B-1 investment costs would be $31.3 billion in current (then-year) dollars as compared with $29.5 billion that is included in the February 1982 Congressional Data Sheets. As noted in the March 1982 Selected Acquisition Report, the Administration's baseline estimate excludes the costs of the following items: bomber penetration evaluation, military construction, simulators, facility improvements and component improvement program.

After applying CBO's inflation assumptions to the OSD CAIG estimate, the B-1 investment costs would be $41 billion in current dollars. Using the Air Force's April 1982 inflation rate assumptions, the comparable cost would be $38.2 billion. The OSD estimate, as noted by the GAO did not include the following items: military construction, a second inertial navigation system, training, or full nuclear certification.

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The OSD CAIG constant dollar estimate was not allocated to specific fiscal years. As you specified in your request, CBO used the aircraft delivery schedules to allocate the costs of the component improvement program, organic depot capability and interim contractor support. The balance of the costs were allocated to fiscal years in the same ratio inherent in the March 1982 B-1 Selected Acquisition Report.

Neither of the estimates include the costs of operating the B-1 once it is in the Air Force inventory or the possible costs of other weapon systems to enhance the capability of the B-1 such as a new short range attack missile or other improvements.

If your staff should have any questions concerning these calculations they may contact Mr. William Myers of our Defense Cost Unit at 226-2840.

Sincerely,

Alice M. Rivlin
Director

cc: The Honorable Jack Edwards
Ranking Minority Member

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Mr. DICKS. Would you like a copy of it?

Dr. DELAUER. Love to.

Let me get to the learning curve, Mr. Dicks. ———. All under the SPO's statement.

Mr. DICKS. What about military airplanes? You told us we can't judge military bombers' costs on the basis of commercial airplane costs.

Dr. DELAUER. No, I didn't say that.

Mr. DICKS. On the C-5 issue they did.

Dr. DELAUER. Not me, I am here talking to you now.

A-10, the chairman's favorite airplane ——— percent; ———.

Mr. DICKS. The whole thing to me, you know, it is just a credibility problem. When you fight that hard not to let something out, it is obvious you think it is going to hurt you or you would make it available to the committee and to the Congress in a timely way. That is what really offends me here. Let's go on.

In your statement—then I will let you comment—go ahead now.

Dr. DELAUER. One of the problems was at the time that all of this was—this big brouhaha about the different estimates, it wasn't a question of the estimates, it was questioning the decisionmaking process within the Department. That was a management prerogative that was being argued about, the fact that we had independent estimates for the purposes of arriving at decisions.

I can't tell you what was in Frank Carlucci's mind. You will have to ask him directly. I think I can give you my opinion of what was in his mind. He listened to all the arguments. All those are staff support to him. He listened to all those arguments, listened to the bases for how these estimates were made, and in the absence of that kind of dialogue and austerely looked at as numbers, there was a reluctance to give them out. Here is where we are. Look, we spent all day talking about these numbers. I am giving you the rationale for them. If you get them in the blind, somebody going over there, just doing it, we have absolutely no control over what the GAO takes as internal documents and then makes use of it.

There was a reluctance not to reveal the numbers, but a reluctance that the numbers were a basis for arriving at a decision where we made a recommendation to this committee on how much this thing would cost.

It is up to you how you view these as lack of confidence, we are not telling you the truth, anything else. Fine. That is why we are here.

CREDIBILITY OF WITNESSES

Mr. DICKS. You made a good presentation about these items today. They are outside of the program. They do add to the cost. There were analyses done on them internally that indicated that in advance of the decision.

When you have this kind of conflict between what we have been told earlier as justification for the program and what you had, we are not getting the same range of information. We are just getting it boiled down.

$20.5 billion, that is it. There wasn't a candid discussion of the fact that you had independent analysis within our own department

that says it could be $5 to $6 billion more. No one ever said that to us.

If we were being frank about this, wouldn't you tell us listen, we have an independent OSD estimate that this could be $6 billion more than what we are telling you? We have an Air Force independent estimate that says it could be $2 billion more. Now we were never told that when this decision was being made last year.

That has got to have an influence on the decisionmaker, the person up here who is trying to make a judgment. He is being told this is going to be $200 million a plane when in fact it is probably going to be—could be—by an independent Air Force estimate which have proven out to be very accurate over the years, probably $260 million a plane.

Dr. DELAUER. Last year, when I testified before this committee on the same subject, I mentioned the fact there were other estimates and that certain elements were in and out of the program. Remember, what the GAO wanted was to examine the documents. They did not want to—what we did, we sat down with them and told them what the numbers were. We told them the rationale, what it was, but the argument was over the documents, not over the information.

As a matter of fact, if you read the testimony given here by the GAO of last week, they finally said look, we got the information, they sat down and talked to us, but we didn't get the documents. Those are internal DOD documents. I would think that what you are interested in is the information in a candid sort of way, not necessarily having all the paperwork.

Mr. DICKS. As long as we know it is accurate. But when there is all this resistance, people start to get suspicious.

I want to go on to one further thing. You only have a contract for the first eight planes, right?

Dr. DELAUER. Lot I (one aircraft) is on contract, and we have a negotiated option for Lot II of 7 aircraft.

Colonel EVATT. Sir, you are correct, the first eight airplanes are negotiated. The entire full-scale development program is on contract with all of the contractors. That amounts to about 25 percent of the total program currently on contract.

Mr. YOUNG. Would you yield?

The total program of the first 15 or the total thing?

Dr. DELAUER. Whole 100 airplanes, 25 percent.

Mr. DICKS. But you haven't negotiated prices for the airframes, the engines, the avionics beyond the first eight airplanes? You say you are on contract. You say you have options. If you haven't got a negotiated price, then how do you know what you have got at this point, beyond the first eight airplanes?

Dr. DELAUER. What you have at the time that you will have for the follow-on airplanes, you will have the history of what these things cost, you will have the R and D behind you so you know what any future changes might be involved, and you sit down and negotiate the price of the article based on that kind of thing.

You also have long lead that are already purchased for the follow-on, and consequently that money will have been spent. That will be an acutal, that will not be a negotiated amount. It is like any other contractual action. You make an estimate of what it is

going to be and you have actual cost data and you sit down and negotiate. You have all your figures.

Mr. DICKS. So that means you don't have a firm fixed price contract on anything but the first eight?

Dr. DELAUER. The best way is to say we have firm fixed price contracts on 25 percent of the B-1B program.

Mr. DICKS. But in your testimony you say we know what the hardware is going to cost.

Dr. DELAUER. We do.

Mr. DICKS. How can you know it if you haven't got a contract? It is hard for me—I think it is nice to be able to say yes, we have looked at the numbers, we know what we think it is going to cost, but you haven't got a contract, Dr. DeLauer, do you?

Dr. DELAUER. I didn't say we had the entire program under contract. I said we had 25 percent under contract; therefore, we believe we know what it will cost.

Mr. DICKS. That doesn't necessarily mean that that is what you are going to get it for.

Dr. DELAUER. We may get it for less.

Mr. DICKS. That would be wonderful.

Dr. DELAUER. I know. That is almost the same thing as I heard people quoting the prices of 747s that weren't built yet.

Mr. DICKS. We know what the price is. They are out there in the marketplace.

I will tell you, one side note, I am a lot more convinced of the numbers that were presented on the 747 than I will ever be convinced of the numbers and the distortion and the dissembling that was done in justifying the C-5 numbers. I will tell you this, you look at any two proposals, one being as soft as the C-5 and then what was done to change the Boeing proposal as submitted in order to reduce the cost difference, that is another reason why I am a lot more suspicious about the numbers we are getting right here today, sir.

Dr. DELAUER. In all those cases, we raised the numbers up. You are arguing that I have been lowering the numbers.

MULTIYEAR CONTRACTING

Mr. DICKS. I am saying what you did on the C-5 proposal was to raise the Boeing numbers so that it wouldn't be that much of a difference between the Boeing proposal and the C-5 proposal. I am just telling you that I have spent enough time on that issue to catch on to the tactics that are used. That is why I am so suspicious about this one.

Yesterday representatives of the GAO appeared before the committee to discuss multi-year contracting. One of the points they raised was the DOD does not request firm proposal data for both multi-year and annual contracting.

It was their conclusion you could not get a credible estimation of savings to be achieved through multi-year contracting without such data.

Has Rockwell submitted firm proposals for both annual and multi-year contracting? If not, why not?

Dr. DeLauer. The answer is no, they haven't. The $800 million was an estimate based on historical——

Mr. Dicks. Why does OSD's independent estimate zero it?

Dr. DeLauer. They did not try multi-year.

Mr. Dicks. They probably looked at it and realized the frail reed.

Dr. DeLauer. It is a question of whether we are going to multi-year or not. Your question is what was it based on without having a firm contract in hand.

Mr. Dicks. Should you be asking them to give you a multi-year proposal?

Dr. DeLauer. We will at the proper time. The estimate of $800 million was based on our experience that on all multi-year contracts that we have had in the past, and that we are now negotiating, it looks like about a ten percent savings. We testified before this committee multi-year represents about ten percent. We made the estimate of ten percent. It came to $800 million. I don't think this question about the GAO's comment, the fact we had no basis for estimating that, has any basis whatsoever.

Mr. Dicks. Is that a parametric estimate?

Dr. DeLauer. Yes.

Mr. Dicks. Have you made any estimate of the increase in baseline cost that a refusal by the Congress to grant multi-year authority would cost?

Dr. DeLauer. $800 million.

Mr. Dicks. GAO took issue with the reported savings from DOD on multi-year contracting because those savings were not discounted to reflect the time value of money associated with the accelerated expenditure of funds incident to multi-year contracting.

This is despite the fact that OMB Circular A-94 guidance says discounting should be included. At this time you do include escalation avoidance in your savings estimate.

This appears to be a classic example of taking into account the factors that make the case look good and ignoring the factors that reduce the benefit of an action you are pushing.

GAO's examination of cost savings through multi-year contracting when discounting is included shows that savings are overstated by from five to ten times by OSD, which does not include discounting.

What would be the projected savings for multi-year contracting for the B-1 if those savings were discounted as directed by OMB Circular A-94?

Dr. DeLauer. We can get that for the record.

[The information follows:]

The Administration has testified to Congress that a 100 B-1B program is feasible within a budget ceiling of $20.5 billion in constant 1981 dollars. Included in this baseline budget ceiling is a projected savings of $800 million (fiscal year 1981 dollars) which is anticipated to result from a vigorous multiyear procurement program.

This projection, made before the B-1B was selected as the next strategic bomber, was not developed in accordance with Office of Management and Budget (OMB) Circular A-94. That type of rigorous analysis is underway now as we begin our normal Congressional notification process and we will soon receive firm contractual proposals.

The present value (discounted) analysis which will accompany the B-1B multiyear justification package will conform with OMB Circular A-94.

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Dr. DELAUER. Again, let me make a comment about the discount rate. All the discounted cash flow rate is only as a consequence of whatever the discount rate is. If you can tell me what the discount rate will be in four years, I could make a fortune.

Mr. DICKS. You do it internally for other programs all the time.

Dr. DELAUER. We make an estimate.

Mr. DICKS. To the extent real savings would be less, doesn't that increase the baseline cost of the B-1?

Dr. DELAUER. Remember now, the $800 million is a 1981 cost, so it is not a then year cost, and what I would do for—just parenthetically—since you gave it to me, I would take the CBO estimate and show—really show you what the savings are on multiyear there.

There I could discount then year cost back to present value. It will be a big savings.

Mr. DICKS. Why don't you show that?

[The information follows:]

As previously mentioned, the Air Force submission of the B-1B multiyear justification package will include a present value (discounted) analysis of the savings in accordance with OMB Circular A-94.

Mr. DICKS. Mr. Chairman, I have other questions I would like to put in the record.

[CLERK'S NOTE.—Questions submitted by Mr. Dicks and the answers thereto follow:]

IS THE INDEPENDENT OSD ANALYSIS WORST CASE?

Question. Dr. DeLauer, your statement paints the picture that the OSD independent analysis is a worst case picture. I want to discuss this characterization.

You state that it was done before we had known contracted values. The SPO estimate of the negotiated learning curve contracted values and what we actually got are different, however, according to the data we received from GAO. For instance for Lots I and II of B'1s, a total of 8 aircraft, the actual negotiations produced an increase of $11 million. There is no estimate for Lots III-V, which constitute 92 percent of the total aircraft. The airframe and avionics learning curves are more optimistic than achieved on other programs, and the Air Force testified that similar learning curves used by Rockwell were "unduly optimistic". Given all these factors, can you in fact characterize the OSD independent analysis as worst case, and isn't the SPO estimate, at least on this matter, a best case scenario?

Answer. The OSD analysis was performed prior to B-1B contract negotiations/award. There continues to be absolutely no evidence that the conditions assumed by the OSD cost analysts would in fact occur. All current cost and schedule indicators demonstrate that the B-1B is within its programmed budget. The DoD continues to review the program at the highest levels and remains convinced that the B-1B acquisition program scope and content will be executed within the budgetary estimate.

Question. You also stated that there are discrepancies as to what constituted sufficient spares and depot level support. In the past we have cut back on spares and support in order to keep program costs down. We did this on the C-5 and the F-15. The result was

that we encountered tremendous downtimes on the aircraft and were forced to spend billions to make up the spares deficiencies. I certainly hope we are not going down this same misguided path with the B-1.

What is the level of spares and depot level support in each of the estimates for the B-1?

Answer. The Air Force baseline cost estimate for the B-1B included $1.1 billion (fiscal year 1981 dollars) for initial spares. The AF estimate contains depot level support in the peculiar support equipment line, and this totals $1.8 billion (fiscal year 1981 dollars). The Air Force Independent Cost Analysis (ICA) also estimated the costs of initial spares to be $1.1 billion (fiscal year 1981 dollars). The ICA's estimate of peculiar support equipment, which includes depot level support, totalled $1.3 billion (fiscal year 1981 dollars).

Question. How do these compare to other aircraft where we have not been required to come back and provide additional spares funding in later years?

Answer. Comparing initial spares cost estimates of aircraft with differing missions is difficult as this dictates the level of peculiar spares needed to be procured in support of the first two fiscal years of aircraft deliveries. The B-1B cost estimate for initial spares is $1.1 billion (fiscal year 1981 dollars). This compares favorably with recent strategic, tactical, and airlift aircraft acquisition programs. All aircraft require additional funding for spares throughout their operational life. These spares are procured out of the replenishment spares account.

Question. There is also some disagreement over the duration of the flight test program. Rockwell proposed 1,300 hours. This was described by the B-1B program manager as "a severely constrained flight test program". Yet you now state that 1,000 hours is sufficient. What specific justification do you have for overturning the proposal from Rockwell and the opinion of the program manager on the flight test program?

Answer. The 1000 hour flight test program was recommended by the B-1B Program Manager. The statement attributed to him was taken out of context. The actual constraint is that there is no room for single purpose/objective test missions. All missions will be designed to test as many as four or five parameters or pieces of equipment simultaneously. This accomplishes the maximum testing at the lowest cost. The B-1B test program will maximize available ground testing prior to flight test activities and include multiple test profiles on each flight. The flight test program, including ALCM testing, consists of 1160 hours. This program will provide sufficient flight test time to fully certify two gravity nuclear bombs, SRAM, and ALCM, as well as two conventional weapons, one for conventional bombing and one for naval mine-laying operations. The Air Force is confident the B-1B test program will provide a fully tested aircraft capable of performing all of its defined operational missions.

Question. The bottom line appears to be that the independent analyses represent a prudent estimate of real world requirements, seem to be more consistent with practices on other programs, and account for the inherent risks of a major multi-billion program. If, in fact, their assessment or elements of it prove to be correct, will

the Secretary adjust the baseline and say we tried everything we could to stick to the $20.5 billion figure, we thought we could but events have proven differently, or will he stick to it regardless of what sacrifices have to be made in terms of capability, support and consistent accounting so he can tell the Congress the program is not encountering cost growth?

Answer. Due to the extensive development already accomplished on the original B-1 aircraft, we are confident that the acquisition of 100 B-1B aircraft will be accomplished within the $20.5 billion (fiscal year 1981 dollars) budget estimate. In keeping with the importance of this program, the Secretary of Defense has implemented strong cost control procedures to ensure that the estimate is not exceeded. The President has certified to the Congress that if they provide the funding required on the schedule advanced by the Administration the B-1B program will be executed on time and within budget.

Considering the Administration's commitment to the program, the rigorous program management procedures invoked, and the results of recent contract negotiations, the B-1B program should set an example for major acquisition programs by meeting the established baseline cost estimate on time and within its budgeted cost. The contractors are demonstrating that they are committed to maintaining their schedules and keeping costs down. The Air Force and the Office of the Secretary of Defense are demonstrating that they are committed to vigorous cost management to avoid unessential changes to the program.

COST ANALYSIS GROUP

Question. The independent analysis from OSD was conducted by the Cost Analysis Improvement Group, is that correct?

Answer. Yes, the independent OSD estimate referred to by the GAO was prepared by the Cost Analysis Improvement Group.

Question. Please describe this group, what is its assigned task, when was it created, who makes up the group?

Answer. The Cost Analysis Improvement Group within the Office of the Secretary of Defense was established in 1972 to provide independent analysis of program cost estimates. It includes members from the offices of the Under Secretary of Defense (Research and Engineering), the Assistant Secretary of Defense (Comptroller), the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics), and the Director of Program Analysis and Evaluation. It is chaired by a Program Analysis and Evaluation member.

Question. Have past estimates provided by CAIG overstated actual costs incurred?

Answer. The CAIG has a good track record since its inception. However, several of its estimates prepared for weapon system milestone reviews have been higher than costs actually turned out to be.

Question. What specific evidence do you have to reject their conclusions on the B-1B program?

Answer. The original B-1 program had been through RDT&E and was approved for service use. While the normal CAIG and ICA approach is to use a parametric (historic) estimate, the B-1 pro-

gram had accumulated considerable "grass roots" pricing. In areas, where available; this detailed pricing was used instead of general parametric estimates.

In addition another area of disagreement was the potential additions to the baseline configuration. This included items such as the Forward Looking Infrared (FLIR). These additions had been carefully considered with the operational command and it had been determined that there was no requirement for these additions.

Another area of disagreement was Engineering Change Orders (ECOs). The CAIG had used the historical figure of 10–12 percent which would be reasonable for a new development program. However, considering the fact that a major block change was being accomplished in the transition from the B–1A to the B–1B and the changes were priced into the B–1B configuration we determined the 6 percent was more reasonable. One year later the 6 percent factor still appears valid.

Specific evidence that the $20.5 billion estimate is valid includes the fact that 25 percent of the program is now under fixed price contract below program estimates.

In summary it should be noted that the CAIG estimate was a worst case estimate of what the price could be if the program was poorly managed. At the time the Department established the baseline estimate of $20.5 billion, tight management controls were also initiated. These appear to be working and we are still very confident of the baseline estimate.

NEXT GENERATION CRUISE MISSILE

Question. The July 19, 1982 issue of Defense Week includes a report on a speech by Donald Finch, program manager for the next generation cruise missile to the Association for Unmanned Vehicle Systems annual meeting.

Mr. Finch apparently described the program as being available in the 1990s, and being able to strike any target in the Soviet Union from launchers in the continental US. They will be reportedly smaller and stealthier than current cruise missiles, with a range of 6,000 to 8,000 miles.

The article goes on to describe improvements in engines, fuels, materials and electronics that will result in the improved capabilities. Mr. Chairman, I ask unanimous consent to include a copy of this article in the Committee record.

[The information follows:]

[From Defense Week, July 19, 1982]

NEXT-GENERATION CRUISE MISSILE COULD VIE WITH BOMBER, ICBM

(By Bill Sweetman)

The next generation of cruise missiles, to become operational in the 1990s, will be able to strike any target in the Soviet Union from launchers in the continental USA, from virtually any direction. They will be smaller and stealthier than current cruise missiles, but will offer a staggering fourfold increase in range, flying between 6,000 and 8,000 nautical miles. They may be capable of supersonic speeds. They will sense and avoid defensive systems, and will hit with such accuracy that non-nuclear warheads can be used against many high-value targets.

Development of propulsion, materials and guidance technology leading to such weapons is being sponsored by the Defense Advanced Research Projects Agency, ac-

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cording to DARPA program manager Donald Finch. He revealed some of the awesome potential of advanced cruise missiles to the Association for Unmanned Vehicle Systems' annual meeting here last Wednesday.

DARPA's revelations seem certain to herald another round in the quarter-century-old bomber-versus-missile controversy. The advanced cruise missile will be operational within a few years of the completion of Strategic Air Command's force of "interim" B-1B penetrating bombers, and would roughly coincide with the introduction of the Advanced Technology Bomber, SAC's "definitive" penetrator. But the advanced cruise missile proposed by DARPA could render both aircraft unnecessary if it lived up to its promise.

The ground-launched cruise missile is not covered by the SALT II arms control agreement, which did not anticipate the development of such weapons with intercontinental range. Also, noted Finch, "we can proliferate advanced cruise missiles, due to their small size, and they are easy to hide."

Current cruise missiles, in DARPA's view, are limited because they are based on technology that existed before the vehicles were designed. New technology developed specifically for cruise missile applications and incorporated in advanced weapons will achieve simultaneous advances in stealth, accuracy and maneuverability. It will provide a quantum jump in range, in a smaller weapon.

The new weapons, according to Finch, will be too stealthy to register on ballistic-missile-defense sensors and detectors, whether based in space or terrestrially. Their long range will allow them to attack from any altitude or bearing. Maneuverability and artificial intelligence will allow them to respond to threats in real time, while new guidance systems will enable them to recognize their targets before attack. Says Finch: "There just aren't enough rubles to cover everything" needed against such weapons.

The advanced cruise missile would use a number of new techniques to achieve its aims:

New engines. The advance cruise missile would use a "recuperative" or "regenerative" jet or fanjet engine in which some of the waste exhaust heat is channeled back into the engine cycle through a heat exchanger. It has been known for many years that such engines would offer tremendous fuel efficiency—and greater range for a given vehicle size—but until now no practical airborne recuperator has been designed. DARPA may be pinning its hopes on advanced ceramics to overcome this problem.

New fuels. DARPA is looking at fuels offering twice as much energy per pound as the JP-9 or JP-10 jellified fuels of the current cruise family, dramatically increasing vehicle range for a given size. Moreover, the new fuels will be of greater density, so the missile can be made smaller once again. This means lower air resistance and greater range.

Materials. The advanced missiles would be built of high-temperature, low-observable materials such as carbon-carbon composites, used on parts of the Space Shuttle. References to heat-resistance materials suggest that the advanced cruise missile may fly at high supersonic speed, although Finch did not specify this.

Electronics. The basic guidance of the weapons would be inertial rather than terrain-matching. Onboard detection and threat analysis equipment would warn the missile to steer around or evade defenses. The missile would carry some form of autonomous terminal homing equipment to identify and strike its targets.

DARPA has already looked at 26 possible basing and launch modes for the advanced cruise missile. As well as requiring "a new education for some people" in the context of strategic missions, the missile could be used to provide direct support for the Rapid Deployment Force from the continental USA, or to attack maritime targets—yet another bomber mission.

Finch's speech, which was to have been delivered by DARPA director Dr. Robert S. Cooper, was music to the ears of the AUVS audience; many members want to recover the ground that unmanned systems have lost since the mid-1970s. But, as one attendee remarked, "the bomber guys aren't going to like this. Not at all."

Question. What is the status of the NGCM program, how much funding is included in the fiscal year 1983 request and in the five-year program.

Answer. The NGCM program is just being initiated by the Defense Advanced Research Project Agency (DARPA). Being a DARPA project it is accordingly an investigation into very advanced technology in the exploratory development context. The

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fiscal year 1983 request is $7.7 million and the five-year program includes approximately $82.7M.

Question. What is its projected IOC?

Answer. Considering the very advanced research nature of this project an IOC projection at this time would be very tentative. However, providing the research is successful, a planned IOC would be the early to mid 1990s generally centered around an optimistic date of 1992.

Question. How would it be deployed?

Answer. Considering the very advanced technologies being investigated such as engines, fuels, materials and observable features and the potential affect of these technologies on range, it is far too early to seriously consider deployment. During the course of the program various deployment options such as CONUS basing and aircraft carriage will be investigated.

Question. This development must raise questions about the necessity of future manned bombers, either the B-1B or the ATB. Has this program been evaluated in the context of the manned bomber requirement in any specific study? If so, what were the conclusions, if not, why not?

Answer. The time frame for the availability of this DARPA cruise missile is well beyond that of the B-1B and even the ATB. It is very advanced research at this point in time, and it is questionable whether the technology will even be feasible which is why it is a DARPA project.

This specific project has not been evaluated in the context of manned bombers due to the very advanced nature of the project. In no way does the project attempt to duplicate the wide range of capability that is available from a manned bomber system that includes capabilities over a broad range of strategic missions ranging from the ability to strike imprecisely located targets to conventional operations.

Question. Does it make sense to proceed with two very expensive bomber programs when the potential to achieve the same objective exists with cruise missiles which could cost less and be more survivable?

Answer. Even if this very advanced project were completely successful, it should not be put in the same context as manned bombers such as the B-1B and ATB. Manned bombers posses inherent flexibilities across a broad range of potential conflict from general nuclear war to conventional warfare to force projection and even sea lane control. This far exceeds the capabilities of even advanced cruise missiles. Cruise missiles, for example, are incapable of locating and destroying imprecisely located or mobile targets. Cruise missiles, however, remain a valuable potential adjunct to the manned bomber in a variety of missions.

FOLLOWON MISSION NEEDS

Question. Dr. DeLauer, you testified the baseline includes everything needed "to perform its mission". But you admit later the FLIR would be beneficial for a conventional role. As a follow-on cruise missile carrier we will probably want internal ALCM capability.

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The B-1 is being sold not just as an "interim" strategic bomber, but as a long term conventional bomber + ALCM carrier.

Does the SPO $20.5 figure include everything needed for these follow-on missions?

If not, why not?

If so, why are the FLIR and internal ALCM capability not included?

Answer. Yes. The B-1B is truly a multi-role bomber. It will be the mainstay of the manned bomber leg of the strategic triad, capable of delivering nuclear weapons, launching cruise missiles, or delivering conventional weapons.

Costs for total ALCM integration into the B-1B, to include internal and external carriage/launch capability and avionics as well as a conventional capability, is included in the $20.5B (fiscal year 81$) cost estimate.

Due to the high quality of the forward looking radar, FLIR is not a candidate for inclusion at this time and is not needed to perform the expected B-1B missions. Therefore, costs for FLIR have not been identified and are not part of the $20.5 billion baseline. However, in recognition of the multi-role mission of the B-1B and the potential for future roles not yet defined, the B-1B and the potential for future roles not yet defined, the B-1B is being designed to accommodate growth where practical. For example, space and power privisions for a FLIR are included in the baseline program.

[CLERK'S NOTE.—End of questions submitted by Mr. Dicks.]

Mr. ADDABBO. The gentleman from Virginia?

Mr. ROBINSON. No questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Florida?

DEPOT SUPPORT OF B-1B

Mr. CHAPPELL. Dr. DeLauer, on the depot support, the $20.5 billion B-1B baseline did not initially include funding for the development of a depot support capability. The Deputy Secretary of Defense on November 4, 1981 directed that the $1.8 billion support equipment funding estimate absorb the costs for developing a depot support capability, and that interim contractor support be funded outside the B-1B baseline until the depot support capability was in place.

Is that a correct statement?

Colonel EVATT. Yes sir, it is.

Mr. CHAPPELL. Why? How does that fit with the statement that you—

Colonel EVATT. I think that is consistent with what Dr. DeLauer said earlier.

Mr. Carlucci had before him all the various cost estimates. There was disagreement about how much the depot support cost estimate was. After reviewing those, he put in his memorandum that the Air Force suggestion that it was $1.8 billion required for support be held to that figure.

That is what it says. It is that simple.

The $1.8 billion is always satisfied.

Mr. CHAPPELL. It has always been in there?

Colonel EVATT. Yes, sir. His statement in there is consistent in his memorandum to us to do the job for what we said we could do it for. There has never been any argument with that.

OSD said it might cost more.

Dr. DELAUER. It is a judgement on what that might cost. Mr. Carlucci said you estimated $1.8 billion. I will hold your feet to the fire. You bring it in for that.

While other people say it may cost more, I will not accept that. We are going to manage this program to what you said you would manage it for.

Mr. CHAPPELL. That figure holds good?

Dr. DELAUER. Yes, sir.

Mr. DICKS. Just like they did on the C-5 program.

Mr. CHAPPELL. Now Boeing is on schedule.

INTELLIGENCE REPORTS

Mr. ADDABBO. One final question before we go to special access.

One role of Army Intelligence is the production of validated intelligence assessments ———.

The committee is advised that a Department of the Army intelligence production element has published a series of reports which support the Army's alternative view that the———.

Provide the following documents for the record:———.

Mr. DELAUER. We will get those for you, Mr. Chairman.

[The information follows:]

[The classified reports will be provided for committee files.]

GAO ACCESS TO B-1B COSTS

Mr. CHAPPELL. One final question:

As I understand, there has been some question about the refusal to give GAO access to certain of the B-1B cost estimates.

Mr. DELAUER. Documents, sir.

Mr. CHAPPELL. If I understand your position on this—and I would like to have you summarize it—is it a fair statement to say the Air Force and the Department of Defense provided the GAO with copies of the B-1 cost estimates?

Mr. DELAUER. We provided them. Yes, we did.

Mr. CHAPPELL. The cost assessments were based on the scope of the content of the program as directed by the Deputy Secretary of Defense and as approved by the Congress. This total program cost estimate for acquisition of 100 B-1Bs is $20.5 billion in 1981 dollars and has not changed?

Mr. DELAUER. That is accurate, it is $20.5 billion.

Mr. CHAPPELL. Originally the GAO was denied internal cost estimates and working papers used in the deliberation process which led to the final DOD configuration and cost estimate for the B-1B bomber because these internal documents contain estimates which ultimately were not approved for the B-1B for the Secretary of Defense?

Mr. DELAUER. Yes, sir.

Mr. CHAPPELL. Although the specific documents will not be provided, they have agreed to discuss all aspects of these documents with the GAO?

Mr. DELAUER. Which we did.

Mr. CHAPPELL. Which you did?

Mr. DELAUER. Yes, sir.

Mr. ADDABBO. Before we go into special session, I would like to insert some questions in the record for your full and complete response.

[CLERK'S NOTE.—Questions submitted by Mr. Addabbo and the answers thereto follow:]

MODIFICATION OF TWO B-1A'S FOR THE B-1B TEST PROGRAM

Question. The Committee is advised that two of the original B-1As will be modified for the B-1 testing program.

Specifically, what are the major differences between the B-1A and the B-1B?

Answer. Longer Range:

Reduced Drag—14 drag counts at 25 degree wing sweep;

Simplified overwing fairing;

Composite vanes/weapon bay doors and flaps;

Higher takeoff gross weight—477,000 pounds (B-1B) versus 395,000 pounds (B-1A);

Provisions for external fuel tanks (six 1,000 gallon tanks).

Improved Engines:

Longer life;

Simplified installation: "neutral engine", simplified nozzle.

Improved Prelaunch Survival:

Improved rapid and reliable engine start; air turbine starter and crossbleed.

Weapons Growth Flexibility:

Internal and external Air-Launched Cruise Missile (ALCM) carriage;

External Short Range Attack Missile (SRAM) carriage;

Movable forward weapons bay bulkhead.

Improved Penetrativity:

Reduced radar cross section (RCS).

Improved electronic countermeasures (ECM):

Band 8 receive/transmit.

Bands 1, 2, and 3 receive:

[Deleted] Countermeasures;

Camouflage Techniques.

Digital Radio Frequency Memory (DRFM).

Tail Warning System (TWS).

Improved Avionics:

Air Force Standard Communication and Traffic Control Equipment;

Satellite communications;

Multimode radar;

Terrain avoidance/terrain-following radar adapted from F-16 development;

New Offensive Avionics System (OAS) equipment recently developed for the B-52 program;

Air Force standard data bus and program language;

Lower cost modern Electrical Multiplex (EMUX)/Central Integrated Test System (CITS).

Question. What specific modifications and/or changes are you making to these modified B-1As which you will be testing?

Answer. Changes required for B-1A Aircraft Number Two:

Add weapons bay spoilers;

Incorporate hinge moment changes;

Incorporate composite weapons bay doors;

Add stores management control;

Add/modify flight test instrumentation;

Replace limited life crew escape system components;

ALCM carriage/release provisions.

Changes required for B-1A Aircraft Number Four:

Replace limited life crew escape system components;

Install a tail warning radar system;

Add a SATCOM system;

Replace tires;

Replace the following offensive avionics equipments:

Forward looking radar;

Terrain following radar;

Inertial measurement units;

Radar altimeters (2);

Avionics processors (3);

Doppler radar;

Mass storage unit and data transfer unit;

Avionics controls and displays.

Add missile interface unit;

Replace the B-1A ALQ-161 defensive system group components with production LRUs and B-1B advanced capability modification;

Replace B-1A primary avionics control unit and defensive avionics control unit;

Add band 8;

Add bands 1, 2, and 3 receive antennas;

Incorporate MIL-STD-1553B data bus;

Question. What components or subsystems will be in the B-1Bs that will not be tested in the two modified B-1As?

Answer. The strengthened landing gear to accommodate the increased takeoff gross weight (477,000 pounds) of the B-1B and the F101-GE-102 engine, which is an improved model of the F101-GE-100 engine developed and qualified on the B-1A aircraft in 1975-76, will be in the B-1Bs. These changes will not be tested in the two modified B-1As.

The strengthened landing gear involves minor beef up of the original B-1A main landing gear, fit and function check, and heavier tires (increased ply rating from 26 to 30). It will be ground tested to four service lifetimes (over 50,000 hours).

The B-1B engine has evolved from the extensive testing of the B-1A engine with almost 2,000 hours of flight test, (6,214 engine flight hours and the Derivative Fighter Engine effort. Thus, it is a tested, reliable, durable engine that has undergone some ten years of efforts.

Question. What components or subsystems of the B-1Bs will necessitate the most testing?

Answer. The integration and flight test evaluation of offensive and defensive avionics systems using B-1A aircraft number 4 and B-1B aircraft number 1 will require the most testing.

Question. When will the avionics for the B-1B be fully developed?

Answer. The avionics systems are adapted from already developed systems (e.g., B-52 OAS, F-16 radar and INS) and will be available to support flight evaluation starting in July 1984 on B-1A aircraft number 4.

B-1 SIMULATORS

Question. According to the GAO, the B-1 simulators needed for training are funded in a separate program element.

Is this accurate?

Answer. 1. The B-1B simulator is currently funded, in fiscal year 1984 and beyond, in program element 64227F for flight simulator development and program element 11126F (BP 1200) for flight simulator production. The Air Force believes the best way to ensure delivery of an optimal trainer to the field is to provide funds to the Simulator Program Office for development and procurement of training devices. The Air Force intends to continue this funding approach on future simulator programs since it provides cohesive and effective management of these programs.

How many of these simulators are needed for the B-1?

Answer. At this time, the B-1B simulator program plans include five weapon system trainers and two mission trainers.

Question. What are the development costs of these simulators? What are the procurement costs?

Answer. The development cost of the planned B-1B simulator program is approximately $100 million (fiscal year 1981 dollars) with a procurement cost of about $200 million (fiscal year 1981 dollars).

Question. Are any other costs for the B-1 simulator to be incurred such as a "software support center"?

Answer. The software support center is included in the B-1B simulator program.

Question. What is the "bottom line" for all B-1 simulator costs?

Answer. The B-1B simulator program acquisition costs will not exceed $300 million (fiscal year 1981 dollars). These costs include research and development, production, and initial spares.

Question. What is your rationale for failing to include the cost of B-1 simulators in the total cost of the B-1 program?

Answer. The Air Force believes the best way to ensure delivery of an optimal trainer to the field is to provide funds directly to the Simulator Program Office for development and procurement of training devices. The B-52 Aerial Refueling Part Task Trainers, the KC-135 Boom Operator Part Task Trainer, and the B-52 Electro-Optical Viewing System were handled in the same manner. The Air Force has clearly identified the cost of the simulator. In accordance with DEPSECDEF memorandum of 4 November 1981 simulator costs are not included in the $20.5B baseline program. In the SAR, the simulator is clearly identified as a related program and the not to exceed cost ($300M in fiscal year 1981 dollars) is provided.

Question. In September 1981, AFSC stated that funding B-1 aircrew training devices under a separate program element is counter

to the tenets of the planning, programming and budgeting system, and that simulator costs should be included directly in the B–1 program. Has AFSC changed its mind?

Answer. AFSC is in agreement with the Air Staff to procure the B–1B simulators under a separate program element for simulators managed by the Simulator SPO.

SAVINGS FROM LEARNING CURVES

Question. The Committee is advised that in setting cost estimates for the B–1, the Air Force made certain assumptions with regard to savings to be realized through "improvements in the learning curve." What assumptions were made in the development of these projected savings from "improvements in the learning curve?"

Answer. The primary factors influencing the development of the B–1B learning curve were the following: the B–1B is not a new program; the design/configuration is technically mature and is at least 80 percent common with the original B–1 aircraft; a large percentage of the previous workforce has been retained/returned to the program; firm fixed price contracts are being utilized, and tight management controls to minimize program changes will allow undisturbed production, starting with the first aircraft.

Question. Are these projected savings from an "improved learning curve" just "back-of-the-envelope" calculations or are they based on "hard" data?

Answer. The factors that led to the development of the B–1B learning curve are based on hard data. Primary among these factors is that the B–1B is a technically mature aircraft sharing 80 percent commonality with the original B–1A aircraft that was flight tested for over 1890 hours. In addition, the B–1B configuration is firm, and stringent management controls have been developed to ensure a minimum of changes during production. (Studies have shown upwards of 11 percent of manufacturing hours can be attributed to configuration changes made during manufacturing.) Finally, the estimated B–1B learning curve is consistent with learning curves experienced on a wide variety of military aircraft including bomber, cargo, and fighter versions.

Question. What are specific examples of savings to be realized through "improved learning curve" for the B–1?

Answer. While the B–1B airframe manufacturing learning curve is consistent with Air Force experience on a wide variety of other major aircraft acquisition programs, additional savings could be realized from the B–1B having a firm configuration, over 1890 hours of B–1A flight test completed, and stringent management controls over configuration changes.

Historically, over 11 percent of manufacturing hours can be attributed to configuration changes that occur during production. Based on the stability/maturity of the B–1B design, configuration change will be held to a minimum, thus providing the opportunity for additional savings.

Question. What are the projected savings to be realized in the B–1 procurement through an "improved learning curve?"

Answer. The B–1B program expects to achieve the projected learning curve for the airframe manufacturing process. The B–1B

learning curve is consistent with those the Air Force has experienced on a wide range of bomber, cargo, and fighter aircraft acquisition programs. Additionally, savings should be realized from the tight management controls imposed on the B–1B configuration. These controls ensure that expensive configuration changes that disturb the production process do not occur. Studies have shown that over 11 percent of manufacturing labor hours are directly attributable to configuration changes made during the production phase.

Question. The SPO estimated that Lot II, consisting of 7 aircraft, would require 7,751,000 man-hours to produce the airframes. The actual negotiated figure is 17 percent higher, at 9,126,000 man-hours. How does this fact affect your assumptions on learning curves?

Answer. With respect to Lot II, the 7,751,000 and 9,126,000 man-hours were the manufacturing man-hours basis for the opening negotiation positions used by the B–1B Program Office and Rockwell International, respectively. The actual number of manufacturing labor hours contracted for in Lot II is 8,499,512 man-hours, which is consistent with the Air Force learning curve estimate for airframe manufacturing.

Question. The negotiated price for producing Lot II airframes exceeded the SPO estimate in the baseline by $12.7 million. Is the baseline being increased to reflect this fact?

Answer. No. The baseline costs of the B–1B will not be increased. In negotiating the contract for the seven aircraft contained in Lot II, the B–1B Program Office used an initial negotiating position that was $12.7 million below what was finally put on contract. The actual contract values are within the B–1B baseline budget estimates for airframe manufacturing costs.

B–1 FATIGUE ARTICLE TESTING

Question. The B–1B contract with Rockwell includes a Fatigue Test Article, an item which is unfunded and which is not included in baseline cost estimates. Fatigue testing of the wings and carry-through box was accomplished on the original B–1 program.

Why is fatigue testing of a complete airplane not considered important? Is not such testing traditional in aircraft programs?

Answer. Fatigue article testing is important, but for sound technical reasons managerial decisions were made to forego this testing in the B–1B program. The B–1A program made major innovations in the structural verification process of large aircraft. In the original program, over two-thirds of the B–1A's large components were subject to Design Verification Tests (DVTs). The results of these efforts, along with a continuing series of Design Development Tests (DDTs) of the B–1B's smaller components, convinced Air Force decision makers a full-scale fatigue article test was not required.

Question. Will not changes in wing design partially invalidate fatigue test data previously gathered?

Answer. Major changes in the existing B–1B wing design could invalidate previous fatigue test data; however, the current B–1B uses the basic, proven B–1A number 4 wing design. Therefore,

there is no impact on the validation of the previously obtained fatigue test data.

As a side issue, the simplified fairings around the wing involve a very minor structural change and do not impact this assessment.

Question. Why would the Air Force include a fatigue test article in the contract if it has no intention of buying that article?

Answer. The Air Force has an option to purchase full-scale fatigue article data and a fatigue test article in the Lot III production buy. By requesting the contractor to place a "Not To Exceed" estimate in their proposal, the Air Force has bracketed the amount required if there were a subsequent decision to do this testing. Based upon the extensive testing accomplished during the prototype B-1A program and planned critical component testing on the B-1B, there is no intent at this time to exercise this provision of the contract. This option is available through October 1983.

Question. The Air Force SPO estimated the cost of a fatigue test article at $120 million, while the Air Force and OSD independent estimates put that cost at $70 million. What is the reason for so large a difference in estimated costs?

Answer. The System Program Office estimate for the fatigue test article was developed using "Not To Exceed" proposals from Rockwell International.

The Air Force Independent Cost Analysis used the Rockwell International alternate proposal for the cost of the fatigue article and the durability tests.

The price on this type of testing can also vary significantly with the complexity of the fatigue test article and the levels of testing to which this article will be subjected.

Question. Specifically, what data is the Air Force using which would indicate that a fatigue test article is not necesesary?

Answer. There is a four-part answer to this question.

1. During the original B-1A program, complete Design Verification Tests (DVTs) were performed on the wing carry-through structure, wing outer panels, portions of the forward and aft intermediate fuselage, aft fuselage, and portions of the empennage. These key survival elements of the aircraft will not be altered in the B-1B and therefore the results of these tests remain valid.

2. Design changes which were recognized in the DVT program were implemented in B-1A number 4 and were planned for B-1A number 5 and subsequent aircraft. These changes will be incorporated in the B-1B aircraft where applicable.

3. The B-1A number 4 flight test program provided the confidence the Air Force needed to verify that the structural changes made to the original design were beneficial. We also verified that our structural engineers were able to accurately predict external loads by analysis. The Air Force refined its Finite Element Analysis technique to predict internal stresses for use in its on-going Durability/Damage Tolerance Analysis (D/DTA).

4. The baseline B-1B program includes 34 all-component DVTs, a four-lifetime fatigue test on the heavweight main landing gear, and a complete D/DTA using Air Force crack growth criteria. From this effort, we will be able to identify any additional design change/operational change requirements as a part of the USAF Structural Integrity Program. This program monitors actual air-

craft usage, defines inspection intervals, and emphasizes flight safety throughout the aircraft's lifetime.

COST FOR ENGINEERING CHANGES

Question. Dr. DeLauer, you state you are confident the B–1 program can be held to your estimated baseline costs because you have provided for a 6 percent engineering change factor. GAO informs the Committee that historical experience for aircraft programs is that engineering changes add 9 to 10 percent to costs.

Why are you deviating from past experience in budgeting for the cost of engineering changes?

Answer. Historical factors for *new* R&D programs are somewhat higher (nominally 10 percent ECO) than the 6 percent ECO budgeted for the B–1B. The B–1B, however, is not a "new" program. The B–1 has been in development/test for several years; has completed approximately 2,000 flight test hours, extensive ground (23,688 engine ground test hours, 5,073 flight control simulator test hours, 1,988 landing gear cycles, extensive design development testing) and wind tunnel tests (24,930 wind tunnel test hours); and uses proven offensive (B–52 OAS, F–16 radar and INS) and defensive (tested ALQ–161) avionics. The aircraft is technologically mature, its roles are clearly defined (nuclear, conventional, and maritime support), the design is stable, and the configuration is well controlled by implementation of strong cost and configuration control procedures imposed by the Secretary of Defense. Aircraft improvements identified during the B–1A RDT&E effort are incorporated and funded (these funds are in addition to the ECO budget) in the B–1B baseline. All of these factors, integrated into the B–1B baseline program, convince us that a 6 percent ECO is realistic.

Question. If past experience is borne out, as opposed to your current predictions, what will be the added dollar cost for the B–1 program?

Answer. Unlike a traditional aircraft development/production program, the B–1B is able to capitalize on many aircraft improvements already identified in the B–1A RDT&E effort. These improvements would normally be funded as engineering changes in a typical development production program. However, the interruption in the development of the B–1 has presented us with the opportunity to thoroughly evaluate, incorporate, and fund these improvements in the B–1B baseline. As a result, the technical maturity and stable configuration of the aircraft give us high confidence that the program budget will not be exceeded. In addition, the aircraft design will be closely controlled so as not to exceed the programmed 6 percent ECO factor; therefore, we do not expect any added dollar costs.

Question. The current program shows $700 million for engineering changes. Did the original program estimate show $1.1 billion? Why was that estimate reduced?

Answer. The current program has approximately $960 million (fiscal year 1981 dollars) reserved for RDT&E and Production Engineering Change Orders (ECO).

During Air Force analysis of the various bomber candidates in early fiscal year 1981, several ECO factors were considered. Six,

nine, and ten percent ECOs were all evaluated. The $1.1 billion ECO estimate came from these preliminary studies. When the program estimate was developed, higher ECO factors were discarded because the B-1B offered a unique opportunity for innovative acquisition management. The unique attributes included a significant amount of B-1A ground and flight test, the maturity of the B-1B system, and the stable configuration of the B-1B aircraft. We are confident that a six percent ECO factor is adequate for the B-1B program.

Question. Has the Air Force Logistics Command expressed reservation or concern over the adequacy of the estimated cost for engineering changes? If so, what were they?

Answer. We are not aware of any official AFLC reservations or concerns over the adequacy of the 6 percent engineering change factor. On the contrary, AFLC, SAC, and AFSC commanders support stabilizing the B-1B baseline and have stated their objective is to minimize changes by carefully evaluating all proposed changes for affordability.

EMP TESTING OF B-1

Question. The B-1B program as presently constituted does not include testing for the effects of electromagnetic pulse (EMP). The Air Force SPO estimated cost of EMP testing at $24 million.

Is the B-1B being provided with EMP protection?

Answer. Yes. The B-1 was designed to withstand EMP effects. Most of the on-board electronic packages have already been tested for their ability to withstand an EMP environment and the results show that these systems meet or exceed the B-1 EMP design specifications. The top-level design specifications for the B-1 have not changed. Baseline testing of all new critical components will ensure compliance with hardness criteria.

Question. If so, how will you verify that the protection has been provided unless a test is performed?

Answer. The B-1B, as well as the original B-1, has been specifically designed to nuclear hardness specifications. Additionally, all new critical components will be individually tested (in the baseline program) to ensure compliance with the hardness criteria. Since the B-1B is designed to these hardness standards and the individual components will be laboratory tested, there is a significant level of confidence in its hardness. EMP testing of the aircraft itself has been deferred until the aircraft has been maintained by the using command for a period of time. This will allow the durability/maintainability of the hardness design to be assessed.

Question. DoD has been warning that survivable C3I, including EMP protection, is an urgent requirement. Is this not inconsistent with failing to test EMP protection of the B-1B?

Answer. There is no inconsistency in the DoD positions. B-1B EMP protection will be tested. Critical components will be tested individually in the baseline program, and the total airframe will be tested to confirm EMP maintenance procedures after the aircraft has been fielded for a period of time. This procedure will provide a confidence check of our procedures for maintaining the desired

hardness levels, as well as provide a significantly more meaningful verification of the actual system hardness levels.

Question. In addition to EMP, other nuclear hardness criteria relate to blast, thermal pulse, and transient radiation effects on electronics. Are these to be tested in the baseline program? If not, when will they be tested, and at what cost?

Answer. The nuclear hardness specifications to which the B-1B is being designed include blast, EMP, radiation effects and thermal effects. The planned baseline testing of all new critical components will ensure compliance with these hardness criteria.

Question. You state that the OSD CAIG added Forward Looking Infrared to the Secretary of Defense baseline. The GAO states that this addition was not to the baseline, but to a list of potential costs if the program were to be expanded. Who is correct?

Answer. The OSD CAIG included Forward Looking Infrared (FLIR) as a potential addition to the baseline of the B-1B. The B-1B baseline configuration does not include FLIR, nor is it anticipated to be added. The capabilities inherent in the multi-mode, high-resolution radar preclude the operational requirement for FLIR; thus it was consciously excluded from the baseline configuration.

Question. Considering the complexity of the B-1, do you anticipate that an extensive amount of "interim contractor support" will be necessary for the initial aircraft?

Answer. We plan to use interim contractor support (ICS), particularly for avionics equipment. This approach is driven not by complexity, but by program schedule and concurrency. We plan to use some ICS until a full organic capability is established (currently programmed for 1988 at all levels of maintenance).

Question. In the past, what has been the typical level of "interim contractor support" for other aircraft presently in the inventory?

Answer. A typical level of "interim contractor support" (ICS) for other aircraft in the inventory is difficult to define, since each program is subjected to different support requirements and are funded on a case-by-case basis. The cost estimates for ICS for the B-1B were derived from the historical experience of the B-52 Offensive Avionics System and the E-3A program. Preliminary data and contractural proposals received to date indicate these estimates are reasonable.

ORGANIC DEPOT CAPABILITY/INTERIM CONTRACTOR SUPPORT

Question. The Committee is advised that OSD's Independent Cost Estimate for the B-1 included $400 million for "organic depot capability"—i.e., capability of the Air Force to maintain the initial B-1B's. The Air Force estimate includes no funds for this purpose. Also, the Air Force estimate includes no funds for "interim contractor support"—i.e., the contractor maintaining the initial B-1B's.

What is your intention with regard to maintenance of the initial B-1B's? Do you intend to use "organic depot capability" or "interim contractor support", or a combination of the two?

Answer. Initially a combination of the two maintenance concepts will be utilized. The engines will be supported completely by organic maintenance throughout the fielding of the aircraft. Some avion-

ics equipment will be supported through interim contractor support until an Air Force organic depot capability is established, which is currently programmed for 1988.

Organic support is completely funded within the B–1B baseline cost estimate. Interim contractor support, on the other hand, is funded through other accounts in accordance with Air Force Regulations.

Question. The GAO has testified that the CAIG calculated: $400 million for "organic depot capability"; and $263 million for "interim contractor support." Do you concur with those estimates?

Answer. No. The GAO briefed that the development of an organic depot capability would be an additional $400 million over and above the baseline estimate for peculiar support equipment. On the contrary, all of our preliminary studies and negotiations show that an organic depot level capability can, in fact, be established within the $1.8 billion (fiscal year 1981 dollars) baseline estimate.

The Air Force's current estimate for Interim Contractor Support (ICS) is less than OSD's preliminary estimate of last October. The B–1B Program Office is beginning to receive contractural proposals for ICS which are consistent with the Air Force's estimate of these life-cycle related costs. At this time, the initial proposals indicate that the actual B–1B req rements for ICS will be below that estimated by OSD.

Question. You state the Secretary of Defense baseline did not include interim contractor support, but that the OSD CAIG report did.

A. Did Secretary Carlucci direct that interim contractor support be funded under a separate program element?

B. Is such support normally included in the baseline of a program?

C. Did the original Air Force SPO estimate include the cost of contractor support?

Answer. Deputy Secretary of Defense Carlucci directed on November 4, 1981 that an organic depot capability would be developed out of the program support funds—$1.8 billion (fiscal year 1981 dollars). Also, he directed that interim contractor support, if needed, will be paid for out of the appropriate AFSC/AFLC funds specifically provided for this purpose. The B–1B Program Office cost estimate for the acquisition of the B–1B does not include interim contractor support, in keeping with Air Force policy and the DEPSECDEF memorandum of November 4, 1981.

DEPOT SUPPORT FOR B–1B

Question. The $20.5 billion B–1B baseline did not initially include funding for the development of a depot support capability. The Deputy Secretary of Defense on November 4, 1981 directed that the $1.8 billion support equipment funding estimate absorb the costs for developing a depot support capability, and that interim contractor support be funded outside the B–1B baseline until the depot support capability was in place. GAO states that there are indications that common support equipment (either off-shelf or modified) will be used to lower support costs to help absorb the depot development costs.

How did the Air Force or OSD determine that development of depot support capability could be handled within the $1.8 billion estimated cost of support equipment?

Answer. After a careful review of all cost estimates (i.e., SPO Budget Estimate Submission, AF Independent Cost Analysis, OSD cost estimate), the DEPSECDEF directed that the development of an organic depot capability would be completed within the programmed $1.8 billion (fiscal year 1981 dollars) for peculiar support equipment. The SPO estimate showed that the B-1B is over 80 percent common with the previous program. Also, the B-1B is using developed, off-the-shelf avionics that will lower depot capability acquisition costs. Preliminary contractual proposals indicate $1.8 billion (fiscal year 1981 dollars) for peculiar support will, in fact, be sufficient to include development and procurement of a depot support capability.

Question. How much funding is requested in the fiscal year 1983 budget for the common support equipment? What are the expected total costs for common support equipment? Under what program element will common support equipment be funded?

Answer. $12.9M (fiscal year 1981 dollars) has been programmed in the fiscal year 1983 budget for B-1B common Aerospace Ground Equipment (AGE) (new acquisitions). Program funding from fiscal year 1984 through fiscal year 1987 for common AGE is programmed at $168.0M (fiscal year 1981 dollars). These costs will be funded in Program Element 11126F, B-1B Operations and Support.

Question. What percentage of support equipment is projected to be contractor developed? What percentage of common support equipment is projected to be contractor developed?

Answer. Support equipment peculiar to the B-1B will be fully contractor developed. Common support equipment, on the other hand, is that equipment already developed or under development (and meets the need dates of the B-1B) which is common to more than one weapon system and is therefore funded through a common subsidiary fund account. The contractors are in the early stages of defining equipment requirements and an exact break-out between the amount of peculiar and common is not available at this time.

Question. Provide a listing of the various components—technical orders/data, training, peculiar support equipment, etc.—which comprise the $1.8 billion, showing the costs of each.

Answer. The breakout of the various components of the $1.8 billion (fiscal year 1981 dollars) for peculiar support equipment is preliminary data and has not been negotiated at this date. Though the breakout shown below may change as a result of definitized negotiations, it will not exceed $1.8 billion (fiscal year 1981 dollars).

Fiscal year 1981 in billions of dollars

Technical data	.432
Training	.238
Peculiar support equipment	1.077
Total	1.747

FUNDING OUTSIDE THE B–1B PROGRAM

Question. Dr. DeLauer, you stated that all costs in the budget submission which are associated with the B–1B, but which are not in the B–1B baseline, are clearly labeled.

What is the total of those associated costs in the fiscal year 1983 budget?

Answer. $72.7M. This includes items such as: Common Support Equipment, Facility Improvements, O&S personnel/pay, and mission support.

Question. Please provide a listing showing program element number, fiscal year 1983 request, and cost to completion of the following: B–1B simulator developement; B–1B simulator production; B–1B/F–101 engine CED/CIP; B–1B interim contractor support; B–1B facilities improvement; and B–1B manufacturing technology.

Answer.

Then-year dollars	fiscal year 1983	Fiscal year 1984–88
B–1B simulator development; PE 64227F	0	129
B–1B simulator production; PE 11126F	0	286
B–1B/F–101 engine CED/CIP; PE 64268F	0	260
B–1B interim contractor support; PE 72207F	0	263
B–1B facilities improvement; PE 78011F	43	52
B–1B manufacturing technology; PE 78011F	0	0

POTENTIAL ADDITIONS TO B–1B

Question. According to GAO, there are a number of items which could possibly be added to the B–1B program later on. The costs of these items have been estimated by the SPO, the Air Force CAIG, and the OSD CAIG. The list includes such things as Fatigue Test Article, Forward Looking Infrared, ———; and others.

Must each of these potential additions be specifically approved by the Under Secretary of Defense before they can in fact be added to the B–1B program?

Answer. Yes. As stated in the DEPSECDEF memorandum of 4 November 1981, no change to the presently planned B–1B acquisition program or major changes in configuration will be made without his approval. Each of the changes mentioned are considered to be major program/configuration changes.

Question. When specifically must the Air Force decide whether or not to include each of the following: Fatigue Test Article; Forward Looking Infrared; ———; EMP Testing; and Avionics Standards?

Answer. The Air Force has no plans to incorporate any of the following items into the baseline B–1B program: Fatigue Test Article; Forward Looking Infrared; ———; and EMP Testing. However, except for a Fatigue Test Article contractual option, which must be exercised by Oct 1983, the other items could be incorporated as dictated by operational requirements. The B–1B SPO has initiated a program for incorporating avionics standards within the baseline estimate.

BEST DOCUMENT AVAILABLE

LF/VLF RADIO FOR B-1B

Question. The Committee understands that the Air Force was directed to include so-called Group A provisions (i.e., wiring and space) in the B-1B aircraft for LF/VLF radios.

How much will making these provisions cost, stated in fiscal year 1981 dollars?

Answer. B-1B Group A provisons for LF/VLF receivers and antenna will cost approximately $30 million (fiscal year 1981 dollars).

Question. How much are the radios themselves estimated to cost, stated in fiscal year 1981 dolars?

Answer. The estimated cost of the receivers is $313K per unit (fiscal year 1981 dollars).

Question. Are these costs included in the $20.5 billion baseline? If not, why not?

Answer. The cost for Group A provisions is included in the $20.5 billion (fiscal year 1981 dollars) baseline estimate. The cost of the LF/VLF receivers is not included in the baseline estimate. All LF/VLF receivers for strategic bomber and tanker aircraft will be procured under single management within a separate program element established for this purpose.

Question. When are these radios expected to be available?

Answer. The first 15 LF/VLF units for B-1B aircraft will be available for installation at the end of fiscal year 1986.

USE OF GOVERNMENT-OWNED PROPERTY

Question. According to the Air Force Price Negotiation Memorandum, the Rockwell B-1B full-scale development (FSD) contract was reduced by $194 million because the contractor retained assets left over from terminated B-1A production contracts. These assets included work in process, bar stock, material, tooling and residual inventory. The B-1B FSD contract price was further reduced by $200 million, and the production contract for Lots I and II was reduced by $220 million for the value of Government-furnished property transferred from the terminated B-1A program for use on the B-1B program.

Are these items, whose value totals $614 million, needed to accomplish the B-1B program?

Answer. Yes. These items were acquired in the original B-1A program in the 1970s. Their use on the B-1B will result in substantial savings to the B-1B program.

Question. Why is this $614 million not included in the B-1B baseline cost?

Answer. These items were procured in the 1970s and are included in the $6 billion (fiscal year 1981 dollars) invested in the B-1A program. As an acknowledged sunk cost in the B-1A program, they have not been included in the B-1B program.

Question. Do not DoD instructions require that such items be recognized as cost of a program?

Answer. No, they do not. It has been a long-standing practice that assets paid for in one program, which are later classified as excess or surplus, are available free of charge to other government programs and should not be included in acquisition baseline projections.

As a practical matter, any other method of accounting for these assets would, in effect, amount to paying for an item twice. There are, however, procedures for reimbursing the government if these assets are subsequently sold to the civilian sector, private industry, or foreign governments.

DEFENSIVE AVIONICS

Question. The B-1B bomber's missions include low level penetration missions within a hostile environment. In order to furnish a higher degree of survivability in this role, the B-1B is to be equipped with a defensive avionics suite to counter hostile air-to-air and surface-to-air weapon systems. B-1A aircraft No. 4, fitted with the defensive avionics system, was tested from 1978 through March 31, 1981 including limited survivability and vulnerability tests. In view of the importance of electronic countermeasures in support of the B-1B's mission, what VHF/UHF radio communications jamming capability will the B-1B have at IOC?

Answer. ———.

Question. Will the B-1B have any rearward defensive armament?

Answer. ———.

Question. Have any of the proposed defensive avionics system capabilities or specifications changed from those listed in the RFP Statement of Work and Specification? Has cost affected the defensive avionics system's capabilities? If so, how?

Answer. ———. Cost has affected the defensive avionics systems capabilities only to the extent that it was included in the criteria for eliminating items which are as yet unproven or not operationally required.

Question. Will the defensive avionics system be completely tested during the 1,000 hour flight test program? If not, what capabilities will remain to be tested, what organization will perform the testing, and what program element will it be funded through?

Answer. Details of the B-1B defensive suite flight testing plan are still being developed. Since major portions of the ALQ-161 system have already undergone DT&E and bomber penetration evaluation (BPE) testing and ———. Overall, the defensive avionics will be completely tested, and it will be accomplished within the baseline B-1B Program.

SCOPE OF CONTRACT FOR OFFENSIVE AVIONICS

Question. On March 4, 1981, Boeing submitted a proposal for full-scale development and production Lots I and II for the B-1B offensive avionics at a total price of $1.9 billion. We understand that because this proposal greatly exceeded available funds, the Air Force reduced the effort and awarded contracts based on the reduced scope for the full-scale development and production Lots I and Lot II at a total price of $1.1 billion or $800 million less than Boeing's March 4, 1981 proposal.

In view of this major change, please furnish:

1. A listing of the major items deleted from the scope of work;
2. A statement of the effect of lowering the capabilities and survivability of the aircraft; and

3. An answer to whether any of the items taken from the Boeing work will be accomplished under separate contracts using other funds.

Answer. 1. The following items were deleted from the scope of the offensive avionics work (total price reduced from original estimate of $1.4 billion to $0.5 billion):

Total avionics system performance responsibility clause. This clause would require Boeing to accept responsibility for all avionics (defensive as well as offensive). Boeing retains responsibility for offensive avionics but the responsibility for defensive avionics responsibilities now rests with AIL.

Total avionics standardization. This requirement was dropped when the B-1B SPO determined that the Jovial J-73 language compiler would not be ready for implementation at the onset of the B-1B program. Instead, the program will deliver standardized computers with the capability of also handling current languages.

The requirement for a totally new multi-mode radar (MMR) was reduced to an off-the-shelf radar with growth potential.———.

2. As noted in each category above, the reduced scope of avionics work (which saved $0.9 billion) did not lower achievable capabilities of the B-1B. Likewise, our judgment is that the items which were deleted affect aircraft survivability only marginally, if at all.———.

3. Separate contracts will transfer the defensive system performance responsibility as well as provide for an alternate approach for avionics standardization. However, none of the items taken from the Boeing work will be accomplished outside the $20.5 billion baseline estimate.

COST OF CRUISE MISSILE CARRIAGE

Question. The B-1 SPO cost estimate was $19.7 billion, in fiscal year 1981 dollars, for an airplane which had only external ALCM carriage. Secretary Carlucci directed in November 1981 that $800 million be added for internal ALCM carriage, bringing the total to the now guaranteed cost of $20.5 billion. Four months earlier, in July 1981, the Air Force had testified to this Committee that internal carriage costs would be $64 million for R&D and $200 million for production. (HAC Hearings, fiscal year 1982, Part 6, Page 1123). Thus, the Air Force testimony was that internal cruise missile carriage would cost an estimated $264 million in fixed fiscal year 1981 dollars.

1. Why did this cost estimate *triple*, from $264 to $800 million, when OSD made its adjustment to the Air Force estimate?

2. Was this a way of providing a cushion for other parts of the Air Force estimate which OSD believed were overly optimistic?

Answer. 1. The $19.7 billion estimate of B-1B program costs was made in May 1981 by the Air Force. This figure included provisions for the B-1B to eventually carry air launched cruise missiles since the Air Force plan in May 1981 was to configure the B-1B initially for SRAM as well as nuclear and conventional gravity weapons carriage; cruise missile carriage (CMC) was not planned until the 1990s. In the July 1981 timeframe, preliminary cost estimates for

internal carriage only was $264 M (current estimate for this is $300 M).

However, the President's strategic force modernization decision of 2 October 1981 directed that the B-1B be initially configured to carry air-launched cruise missiles (ALCMs) both internally and externally. Subsequent actions by the Office of the Secretary of Defense (OSD) and the Air Force in October added the necessary money required for both internal and external ALCM carriage ($300 M internal plus $500 M external in fiscal year 1981 dollars).

2. No. The $800 million (fiscal year 1981 dollars) was directed for internal and external ALCM carriage only and will be used for this purpose. We are highly confident in our current cost estimate of $20.5B (fiscal year 1981 dollars) for the total B-1B acquisition program.

Question. What is the actual OSD estimate for providing internal carriage of cruise missiles on the B-1?

Answer. Of the $800M (fiscal year 1981 dollars) for total ALCM integration, approximately $300M (fiscal year 1981 dollars) is for internal carriage.

Question. Dr. DeLauer, you state that the Air Force Independent Cost Analysis (ICA) concluded that the baseline B-1 program would cost $21.0 billion, versus the Program Manager's estimate of $20.5 billion. The GAO reports that the Air Force ICA estimated cost for only an external ALCM carriage. Of course, the B-1 as now configurated is to have both internal and external carriage.

What dollar amount must be added to the Air Force ICA cost estimate to reflect this change in ALCM carriage?

Answer. The Air Force Independent Cost Analysis (ICA) team evaluated the original B-1B cost estimate for a program which only included provisions for future cruise missile carriage. The Air Force estimate for that program was $19.7 billion (fiscal year 1981 dollars). The ICA's estimate was $20.45 billion (fiscal year 1981 dollars).

As an option to this program the ICA team investigated the additional cost of external cruise missile carriage. The team reported the external ALCM carriage on the B-1B needed $127 million for research and development, $405 million for production. However, the ICA did not evaluate internal carriage of ALCMs on the B-1B.

The ICA estimate for external carriage is consistent with the current Air Force cost projections for cruise missile integration. Therefore, $800 million (fiscal year 1981 dollars) should be used as the best estimate for full ALCM capability on the B-1B.

WILL NUCLEAR WARHEADS AND/OR BOMBS BE AVAILABLE FOR THE NUMEROUS NEW WEAPONS SYSTEMS?

Question. In addition to the production of thousands of warheads for various strategic weapons desired by DOD, thousands of nuclear warheads for theater and tactical systems are also scheduled for production in the 1980's.

In 1981, the GAO did a study on the productive capacity of the facilities which manufacture special nuclear material for warheads, and actual warheads. Some excerpts from the study are: "Nuclear materials required to build new weapons are greater than DOD's current production capacity"; "The nuclear warhead production complex may be currently physically and technologically inadequate to meet the projected workload"; "Special nuclear materials availability could become a major factor influencing the size and characteristics of future stockplies."

Is the DOD confident that the Department of Energy—which is responsible for producing nuclear warheads—has the capacity to produce the number of warheads required for the rapid buildup of nuclear weapon systems?

Answer. ———. These improvements need to be made across the board to restore or replace deteriorated or technically obsolete machinery, techniques, or facilities, and to improve the supply of plutonium and tritium used in the production of nuclear weapons. Some of the needed improvements in the DOE complex are underway. The three reactors which produce tritium and plutonium for the weapons program are being upgraded. A fourth reactor, which has been in a standby status, is also being upgraded to allow future restart. Additionally, actions have been taken to start the conversion of the Richland, Wash., N—reactor from production of fuel-grade to weapon-grade plutonium and to restart the associated PUREX fuel processing plant for recovery of plutonium from the irradiated N—reactor fuel. We remain concerned, however, that sufficient flexibility is lacking in the event of unexpected failure of other portions of the weapon production complex. This situation is further impacted by the age of the DOE weapons facilities, which adds an additional degree of risk. The DOD strongly supports efforts to modernize and upgrade the entire weapons production complex and encourages early planning for and replacement of key facilities, including one or more new production reactors, to ensure adequate tritium supplies beyond the 1990's. ———.

Question. Last year, the committee pointed out in a hearing that because of the possible shortfall in special nuclear materials for the production of warheads, consideration was being given to use "spent" or used fuel from civilian nuclear power plants as raw material for the production process which makes special nuclear materials. The Air Force witness stated he supported this policy because of the Air Force's concern about shortages of special nuclear material. Since legislation has passed the Senate which would prohibit the use of fuel from civilian nuclear plants in this role, would approval of the legislation by the full Congress cause a shortfall in the ability to produce nuclear warheads at the level projected?

Answer. As you are well aware, special nuclear material has been provided to the nuclear weapons program by a dedicated government-owned fuel cycle complex. Because of the national security implications of the nuclear weapons plutonium requirements, we believe that the material for weapons should continue to be provided by facilities dedicated to the weapons needs.

Plans for the future nuclear weapons stockpile are incorporated in a joint Department of Defense/Department of Energy document, which is approved by the President. Although the document au-

thorizes production for a five year period, it includes projections for an additional ten years. Present planning to meet these plutonium demands over the full fifteen year period requires many initiatives to increase production, but does not include the use of special nuclear materials produced in NRC licensed facilities. No proposals to take such a step are under active consideration. It should be noted that the option to use fuel from civilian nuclear plants is available, under current international agreements, to all nuclear weapon states. Therefore, the DOD's position is that it does not seem prudent to deny this option by law to the United States because, although we now have no intention to use such fuel, we may need to provide for a sudden unforeseeable increase in the need resulting from an overriding national security requirement or from a calamitous interruption in the plutonium production complex.

Question. Provide for the record, comments by the Department of Energy on the issues of:

Use of "spent" fuel from civilian nuclear plants; and

DOE's capability to produce the nuclear warheads in the time frame that the DOD intends to add them to its stockpile.

Answer. The Department of Energy concurs in the position of the Department of Defense on the use of fuel from civilian nuclear plants as indicated in their response to the previous question on this subject (page 8, insert 1).

The fiscal year 1983-87 nuclear weapons stockpile memorandum (NWSM), the current NWSM under which the DOE and DOD are authorized to produce nuclear weapons, specifies the stockpile of weapons authorized during the indicated years.

It is the intention of the DOE to support the NWSM, ———.

B-1 FLIGHT TESTING

Question. Rockwell proposed a flight test program consisting of 1,300 hours. The contract negotiated with Rockwell calls for 1,000 hours.

What steps will you take if all required testing has not been accomplished at the end of 1,000 hours?

Answer. Two points need to be made at the outset. First, some flexibility has been planned for in the schedule to counter unforeseen difficulties. We feel confident that all of the required testing can and will be accomplished in the allotted time. Secondly, there isn't a 1,000-hour flight test program. Rather, B-1B contracts call for a 57-month combined flight test effort.

If it determined there are difficulties accomplishing all of our desired test activities, we will focus our attention upon the problem areas. There are many managerial options available to prevent a schedule impact: overtime work, weekend flying, tiger teams, et cetera. The test program would be reviewed and restructured as necessary to ensure all essential test and evaluation is completed.

Question. Is it true that current plans are for SAC to conduct "Follow-On Test and Evaluation" if all required testing is not completed by 1,000 hours?

Answer. From April 1983 through June 1986, B-1A aircraft No. 2 and 4 and B-1B aircraft number 1 will be involved in an extensive flight test evaluation. Prior to initial operational capability (IOC)

in 1986, there will be about 1 year overlap with the follow-on test and evaluation (FOT&E) which begins with B-1B No. 2.

The FOT&E will be a combined Strategic Air Command/Air Force Test Evaluation Center effort. The details will be outlined in the test and evaluation master plan which we plan to publish this winter.

Question. What past Air Force programs have included FOT&E made necessary by failure to complete normal DT/OT within the allotted number of flight hours?

Answer. For Air Force programs, flight tests are estimated in terms of objectives to be accomplished vice some predetermined number of flight test hours. Test plans are flexibly designed to accommodate required changes resulting from interim test results.

In the normal course of events, all Air Force programs plan for FOT&E to certify/validate new requirements, modifications, tactics, expand envelopes, et cetera.

Question. What position is the Air Force in vis-a-vis the contractor if all required testing is not accomplished at the end of 1,000 hours? Will, for example, specifications be relaxed or waived in some fashion? Will the Air Force pay for the additional tests that may be required? Will such additional testing be charged against the B-1 baseline costs?

Answer. The planned 57-month flight test will be developed and conducted to provide the Strategic Air Command with as capable and diversified a bomber aircraft as possible.

If substantial difficulties in the test program are encountered, which we do not foresee, adjustments could be made. Our testing requirements have been prioritized, and those tests of lesser importance could be modified or truncated, as necessary. For example, options such as testing the primary and secondary modes of releasing a particular weapon, but not testing the tertiary mode would be considered. In other words, our flight test plan is a guide and not a rigid, uncompromising binder.

Follow-on tests are part of all Air Force programs. The Air Force pays for this testing. FOT&E is not part of the acquisition program and therefore, is not an add to the B-1B, or any other weapon system baseline cost.

INITIAL SPARES FOR B-1B

Question. The B-1B baseline includes funding for enough initial spares for 2 years of support for the first 17 aircraft to be delivered. Apparently, the initial spare parts for the remaining 83 aircraft are to be funded out of replenishment spare parts.

Please explain this. What is the logic in cutting off initial spare parts funding after 17 aircraft out of 100 are delivered?

Does this action follow normal acquisition practices used in other aircraft programs?

Are replenishment spare parts included in the $20.5 billion baseline?

Answer. The B-1B program has initial spares funding through fiscal year 1986. The 100th aircraft is scheduled to be procured in fiscal year 1986. The B-1B program has $1.1 billion (fiscal year 1981 dollars) budgeted in initial spares for all 100 aircraft.

Replenishment spares are never considered part of any weapon system's acquisition package, and they are not part of the $20.5 billion (fiscal year 1981 dollars) B-1B baseline.

Question. The B-1B baseline includes funding for 100 percent of the spare engines required (80 engines) for the program.

Please explain this, comparing it to your plans for aircraft initial spares.

Answer. The B-1B baseline includes 78 spare engines. The spare engines make up about 27 percent of the $1.1 billion (fiscal year 1981 dollars) initial spares package budgeted as part of the baseline program.

Question. The total included in the B-1B baseline for initial spares is $1.1 billion.

Up to the time of deployment of the 100th B-1B, what is the estimated total cost of spare parts?

Please explain why only $1.1 billion is used as the cost for initial spares.

Answer. Air Force regulations specifically spell out which costs are to be included as Program Acquisition Costs. Initial spares and initial spare parts are required entries. On the other hand, replenishment spares are in the Operating and Support cost account and are excluded from Program Acquisition Costs. Replenishment spares include war reserves spares kits, base level self-sufficiency spares, initial support spares list items, and other war reserve materials as well as peacetime operating stocks.

The following table, which deals only with initial spares, lists some typical examples of the major aircraft budgets for these assets.

Weapon system	*Percent*[1]
B-1B	8.0
A-10	6.7
F-15	8.1
F-16	8.8

[1] Percentages of recurring flyaway minus engineering change orders.

Fighter aircraft are configured for deployment and fly more varied, stressful missions. Thus, they must be provisioned accordingly. Bomber aircraft, on the other hand, operate almost exclusively from fixed, sovereign bases.

USE OF GOVERNMENT OWNED PROPERTY

Question. According to the Air Force Price Negotiation Memorandum, the Rockwell B-1B full-scale development (FSD) contract was reduced by $194 million because the contractor retained assets left over from terminated B-1B production contracts. These assets included work in process, bar stock, material, tooling and residual inventory. The B-1B FSD contract price was further reduced by $200 million, and the production contracts for Lots I and II was reduced by $220 million for the value of Government furnished property transferred from the terminated B-1A program for use on the B-1B program.

Are these items, whose value totals $614 million, needed to accomplish the B-1B program?

BEST DOCUMENT AVAILABLE

Answer. Yes, these items are needed. They were acquired for the original B-1A program in the 1970s and their use on the B-1B will result in substantial savings to the B-1B program.

Question. Why is the $614 million not included in B-1B baseline costs?

Do not DOD instructions require that such items be recognized as a cost of the program?

Answer. These items were procured in the 1970's and are included in the $6 billion (fiscal year 1982 dollar) invested in the B-1A program. As an acknowledged cost in the B-1A program, they have not been included in the B-1B program.

It has been a long standing practice that assets paid for in one program, which are later classified as excess or surplus, are available free of charge to other government programs and should not be included in acquisition baseline projections.

As a practical matter, any other method of accounting for these assets would amount to paying for an item twice. There are, however, procedures for reimbursing the government if these assets are subsequently sold to the civilian sector, private industry, or foreign governments.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

Mr. ADDABBO. The committee will now go into a special access session. All those not so cleared, please leave the room.

THURSDAY, JULY 15, 1982.

AMMUNITION PROGRAMS

WITNESSES

DR. RICHARD D. WEBSTER, DEPUTY ASSISTANT SECRETARY OF DEFENSE, LOGISTICS AND MATERIAL MANAGEMENT, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR MANPOWER, RESERVE AFFAIRS AND LOGISTICS

DR. MAC C. ADAMS, DEPUTY UNDER SECRETARY OF DEFENSE, TACTICAL WARFARE PROGRAMS, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING

S. J. CULOSI, DIRECTOR, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (PROGRAM INTEGRATION), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR MANPOWER, RESERVE AFFAIRS AND LOGISTICS

CHARLES W. BERNARD, DIRECTOR, LAND WARFARE, OFFICE OF THE DEPUTY UNDERSECRETARY OF DEFENSE, TACTICAL WARFARE PROGRAMS

RON OXLEY, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (LOGISTICS AND MATERIEL MANAGEMENT), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR MANPOWER, RESERVE AFFAIRS AND LOGISTICS

ARMY

MAJ. GEN. LAWRENCE F. SKIBBIE, DIRECTOR OF COMBAT SUPPORT SYSTEMS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION

BRIG. GEN. PETER G. BURBULES, DEPUTY EXECUTIVE DIRECTOR FOR CONVENTIONAL AMMUNITION, U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

COL. WILLIAM F. CHEN, CHIEF OF MUNITIONS DIVISION DIRECTORATE OF COMBAT SUPPORT SUPPLIES ARMY DEPUTY CHIEF OF STAFF RESEARCH DEVELOPMENT AND REQUISITION

NAVY

CAPT. GLENN G. MAYS, DIRECTOR OF AMMUNITION MANAGEMENT DIVISION, NAVAL SEA SYSTEMS COMMAND

BRIG. GEN. WILLIAMS G. CARSON, JR., DIRECTOR, MATERIAL DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR INSTALLATIONS AND LOGISTICS, HEADQUARTERS, MARINE CORPS

AIR FORCE

BRIG. GEN. WILLIAM P. BOWDEN, DEPUTY DIRECTOR, LOGISTICS, PLANS AND PROGRAMS, DEPUTY CHIEF OF STAFF, LOGISTICS AND ENGINEERING, HEADQUARTERS, U.S. AIR FORCE

LT. JOHN J. FROST, CHIEF OF MUNITIONS PROGRAMS, COMBAT LOGISTICS SUPPORT DIVISION, AIR FORCE DEPUTY CHIEF OF STAFF LOGISTICS AND ENGINEERING

Opening Statement

Mr. Addabbo. Today the committee considers the conventional ammunition programs of the Department of Defense.

As last year, the hearings will concentrate on both general management questions and also on specific ammunition end items included in the procurement budgets of the three services.

The committee is interested in reviewing progress that is being made in improving and strengthening the single manager for conventional ammunition.

We are also interested in reviewing improvements in the management of conventional ammunition assets already in the inventory. There are also a number of specific ammunition end items in which the committee continues to have an interest.

The principal witness today is Dr. Mac C. Adams, Deputy Under Secretary of Defense for Tactical Warfare Programs. His responsibilities include R&D and procurement of ammunition. Accompanying him is Dr. Richard D. Webster, Deputy Assistant Secretary of Defense for Logistics and Materiel Management. He is responsible for the care and maintenance of ammunition, and has the OSD staff responsibility for the single manager for conventional ammunition.

There are also supporting witnesses from the three services.

Dr. Adams and Dr. Webster, this is your first appearance before the committee, and we welcome you. Your biographies will be inserted in the record at this point.

[The biographies follow:]

Dr. Richard D. Webster, Deputy Assistant Secretary of Defense (Logistics and Materiel Management)

EDUCATION

Dick Webster earned a Bachelor of Science degree in Industrial Engineering and a Master's and Doctor's degrees in Business Administration. In addition, he has completed graduate studies in National Security Management.

MILITARY EXPERIENCE

Dick served with the U.S. Army Corps of Engineers as platoon leader, assistant battalion operations officer, and battalion operations officer for the 65th Engineering Combat Battalion in Korea. He was awarded the Bronze Star during the Korean action.

INDUSTRIAL EXPERIENCE

Dr. Webster attended college on a Westinghouse Science Talent Search Scholarship. After receiving his Bachelor's degree, he was employed by Westinghouse in the Corporate graduate student program. Subsequently, he had both professional and managerial experience in Engineering, Manufacturing, Business Systems, Finance, and Logistics. He also served on the corporate staff as Staff Assistant to the Vice President of Manufacturing. He was Executive Assistant to the Vice President, Westinghouse Defense Group when he jointed the Department of Defense in July, 1981.

LECTURES, ARTICLES, AND PAPERS

Dr. Webster has lectured on the subjects of strategic planning, cost improvement, and industrial management.

He has lectured at Virginia Polytechnic Institute, Newark College of Engineering, University of Pittsburgh, and the Carnegie Institute of Technology. In his capacity as a lecturer and consultant, Dr. Webster has visited Canada, Mexico, Argentina, Europe and the Middle East, as well as many locations within the United States.

He is the author of numerous articles and papers which have appeared in magazines such as Machine Design, Defense Management Journal, the Society of Logistics Engineers Spectrum and the Westinghouse Logistics Direction.

PROFESSIONAL RECOGNITION

Dr. Webster is a registered Professional Engineer and a Certified Professional Logistician. He has been elected a Fellow of the Society of Logistics Engineers (SOLE), and served as Director, Treasurer, and Vice President of the Society. The Society presented him with the National Inventory Management Award.

He was group chairman and committee chairman for The National Security Industrial Association (NSIA) and served as advisor in logistics management and logistics research to the Department of Defense.

Dr. Webster was awarded a Department of Defense citation for outstanding service in the area of International Logistics. He was the 1981 recipient of the NSIA Greer Award, given to the nation's outstanding industrial logistics executive.

COMMUNITY ACTIVITIES

Dick is active in both church and local community associations. He has worked for the Salvation Army, Boy Scouts, American Cancer Society, and Kiwanis.

FAMILY

Dick is married to the former Jeanne Helbing. They have two sons, Edward and Robert.

Mac C. Adams, Deputy Under Secretary of Defense, Defense, Research & Engineering (Tactical Warfare Programs)

Dr. Mac C. Adams was Senior Vice President, Group Executive of Avco Corporation, responsible for the operations of the Avco Aerostructures Division in Nashville, Tennessee; Avco Specialty Materials Division, Lowell, Massachusetts; and Avco Systems Division in Wilmington, Massachusetts.

Elected to this position in November 1975, Dr. Adams previously served in various management capacities. This include vice president and general manager of the

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Avco Systems Division from 1971 to 1975, and deputy group executive of the Government Products Group from 1968 to 1971.

Except for a period of three years, Dr. Adams has been with Avco since 1955. He helped to organize the Avco Everett Research Laboratory and served subsequently as its technical director and deputy director. He played a major role in solving the problem of ballistic missile and spacecraft reentry. In 1960 he joined the Avco Research and Advanced Development Division in Wilmington (now the Systems Division) as associate technical director and in 1962 was appointed vice president and technical director. Subsequently, he served as vice president and assistant general manager for Space Systems.

From 1965 to 1968, Dr. Adams was associate administrator, Advanced Research and Technology for the National Aeronautics and Space Administrtion in Washington, D.C. While at NASA, Dr. Adams was responsible for the planning, execution and evaluation of all NASA research and technology programs conducted in advanced concepts, structures, components and systems having possible application to the national objectives in aeronautics and space. Additionally, his responsibilities included the management of five research field centers. In recognition of his contributions, he was awarded NASA's Exceptional Service Medal.

Dr. Adams began his professional career with the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics and later served as an aerodynamicist with the Douglas Aircraft Company. He is a Fellow and former Director of the American Institute of Aeronautics and Astronautics. He has served as a member of the Boards of Governors of both the National Space Club and the Aerospace Industries Association. He is currently a Trustee of the National Security Industrial Association.

Dr. Adams participated for many years as a member and then chairman of the NASA Research Advisory Committee on Space Vehicle Aerodynamics. He was a member of the Massachusetts Institute of Technology, Department of Mechanical Engineering Visiting Committee. He received a Ph. D. in Aeronautical Engineering from Cornell University in 1953.

He is married to Sammi Butler Adams and has one son, two daughters, and one stepdaughter.

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Mr ADDABBO. We will also insert your prepared statments. Dr. Adams, you may proceed with a summary of your opening remarks, and then Dr. Webster may do the same.

STATEMENT OF DR. ADAMS

Dr. ADAMS. Mr. Chairman, members of the committee, I appreciate the opportunity to be a witness for the fiscal year 1983 ammunition program hearing.

My opening statement will be brief and will address topics of interest to the Office of the Under Secretary of Defense for Research and Engineering.

First, as you may recall from last year's hearings, the primary OSD staff responsibility for the Single Manager for Conventional Ammunition (SMCA) was transferred from the OUSDRE to Manpower, Reserve Affairs, and Logistics (MRA&L).

However, the transfer of primary staff responsibility does not signify that the OUSDRE is no longer involved. The OUSDRE has oversight responsibility for acquisition functions in the following areas:

Research, Development, Test and Evaluation;

Production Base;

Acquisition; and

Quality Assurance, and Configuration Management during production.

As required by the DOD directive, the SMCA has prepared a five year integrated ammunition procurement plan for use by the OSD staff during consideration of the service's fiscal year 1984-1988 POMs.

The plan does not affect the fiscal year 1983 budget we are here to discuss, but it does indicate that progress is being made and that the DOD review of the ammunition program precedes your budgetary hearings by one year.

My review of the SMCA integrated plan gives me confidence that the new executive director for conventional ammunition, General Hardin, represented today by General Burbules, is taking hold and that improved efficiency and effectiveness will be achieved in the procurement of ammunition.

General Burbules did an excellent job in pulling the five year plan together in a short time. As soon as he was assigned to the SMCA Executive Director's office, he began working with the other service representatives and obtained their full support. The real benefit of the integrated plan is achieved during its preparation prior to its submission to OSD.

Preparing this document provides the services and OSD, for the first time, an opportunity to jointly optimize the economy and effficiency of the services' independently developed ammunition and production base procurement plans via the POM process.

The SMCA integrated the separate service plans, conducted an analysis of the integrated plan and provided recommendations which permit the plan to accomplish the following:

1. Serve as a vehicle for the evaluation of service integrated programs.

2. Stimulate increased inter-service cooperation and coordination.

3. Act as a major forcing function for program alignment and balance to:

Achieve economic production runs;

Foster and protect a healthy, warm production base; and

Ensure balanced workloading of the base, thereby minimizing year-to-year production peaks and valleys as well as stops and starts;

Efficiently allocate production requirements between government-owned and contractor-owned manufacturing plants.

4. Finally, cross level stocks to avoid unnecessary procurement and/or minimize transportation cost.

In this respect the OUSDRE plans to focus on minimizing the cost of directing procurement to selected ammunition producers to maintain an adequate balanced production base to meet peacetime, surge and mobilization requirements.

The defense guidance remains one of achieving the required number of days of ammunition War Reserve Stocks and maintaining minimum sustaining rates of production for surge and mobilization purposes.

During last year's hearing the classified defense guidance for fiscal years 1983–1987 was provided. This guidance remains as presented.

Each service meets this guidance by fiscal year 1987.

In fulfilling my responsibilities as Deputy Under Secretary of Defense for Tactical Warfare Programs, I plan on emphasizing the importance of advancing munitions technology.

Items such as sense and destroy armor can provide us with capabilities heretofore not available. Such munitions are vital to a flexible and devastating capability.

Incidentally, the Office of the Under Secretary for Research and Engineering has decided to establish a new munitions office. The objective of this office will be to promote development of improved munitions to accelerate the deployment of these munitions and to ensure cross-service coordination.

As you are aware, the current administration is extracting itself from micromanagement of ongoing programs. Thus I will rely on the service witnesses to respond to your questions on individual items. There are, however, two programs which I would like to address—the 9 mm handgun and the VIPER weapon system

The DOD is committed to standardizing a 9 mm handgun. Since the cancellation of the 9 mm procurement the services have worked together to rewrite the Joint Service Operational Requirement to assure that we can adopt a commercially available handgun. Commercially available as used here implies that the military handgun can be manufactured using a commercial production line to obtain an affordable price.

The most significant change to the JSOR is that the reliability requirement for the new 9 mm handgun be superior to the current .45 caliber handgun. This change was directed to the services in a recent DEPSECDEF memorandum which I recommended. The services have also been required to provide revised JSOR this month with an acquisition plan by August.

Our intent is that the Army, as the executive agent, conduct another competitive procurement, which may include additional competitors, select a winner, and procure handguns in fiscal year 1983.

The funds to initiate this procurement will be transferred from available Fiscal Year 1982 Coast Guard funds to meet their urgent need.

The VIPER weapon system costs more than we desire. Further, it does not have the capability of an all aspect attack as desired by the Marine Corps.

As we look at alternatives for the congressionally directed test, there are several available in the near term.

One example, the M72-750 Norwegian LAW, is in the weight category of the VIPER and effectiveness is claimed to be near that of VIPER. The Army and Marine Corps will release a request for proposal to obtain weapons under twenty pounds for test.

All of these weapons will be jointly tested by both the Army and Marine Corps. The Army remains committed to a weapon that meets all or most of the requirements stated in the improved light anti-armor weapon required operational capability.

The Marine Corps desires a man portable weapon which provides an all aspect attack capability within the twenty pound weight limitation. Thus at this juncture we may end up with one or a mix of weapons for the light anti-armor weapon (LAW) role.

To address the possibility of a mix of weapons and because of the high costs of VIPER, we plan to conduct a VIPER program review to consider several alternatives. When this review is completed, we will advise you of the decision.

There is one other prepared statement.

Dr. Webster, the Deputy Assistant Secretary of Defense for Logistics and Material Management, will address in more detail the status of the SMCA program and the logistics aspects of the DOD conventional ammunition program.

Thank you for the opportunity to make this opening statement.

[The statement follows:]

DR. MAC C. ADAMS

DEPUTY UNDER SECRETARY OF DEFENSE FOR

TACTICAL WARFARE PROGRAMS, OFFICE OF THE UNDER SECRETARY OF DEFENSE

(RESEARCH AND ENGINEERING)

Dear Mr. Chairman, Members of the Committee. I appreciate the opportunity to be a witness for the FY 83 Ammunition Program hearing. My opening statement will be brief and will address topics of interest to the Office of the Under Secretary of Defense for Research and Engineering (OUSDRE).

First, as you may recall from last year's hearings, the primary OSD staff responsibility for the Single Manager for Conventional Ammunition (SMCA) was transferred from the OUSDRE to Manpower, Reserve Affairs, and Logistics (MRA&L). However, the transfer of primary staff responsibility does not signify that the OUSDRE is no longer involved. The OUSDRE has oversight responsibility for acquisition functions in the following areas:

- Research, Development, Test and Evaluation (RDT&E);
- Production Base;
- Acquisition; and
- Quality Assurance, and Configuration Management during production.

As required by the DoD Directive, the SMCA has prepared a five year integrated ammunition procurement plan for use by the OSD staff during consideration of the Service's FY 84-88 Program Objective Memoranda (POM's). The plan does not affect the FY 83 budget we are here to discuss, but it does indicate that progress is being made and that the DoD review of the ammunition program precedes your budgetary hearings by one year. My review of the SMCA integrated plan gives me confidence that the new Executive Director for Conventional Ammunition (EDCA), LTG Hardin represented today by BG Burbules, is taking hold and that improved efficiency and effectiveness will be achieved in the procurement of ammunition. BG Burbules did an excellent job in pulling the 5 year plan together in a short time. As soon as he was assigned to the SMCA Executive Director's office he began working with the other Service representatives and obtained their full support. The real benefit of the integrated plan is achieved during its preparation, prior to its submission to OSD. Preparing this document provides the Services and OSD, for the first time,

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an opportunity to jointly optimize the economy and efficiency of the Services' independently developed ammunition and production base procurement plans via the POM process. The Executive Director Conventional Ammunition (EDCA) integrated the separate Service plans, conducted an analysis of the integrated plan, and provided recommendations which permit the plan to accomplish the following:

1) Serve as a vehicle for the evaluation of Service integrated programs.
2) Stimulate increased inter-Service cooperation and coordination.
3) Act as a major forcing function for program alignment and balance to:
   - Achieve economic production runs.
   - Foster and protect a healthy, warm production base
   - Insure balanced workloading of the base, thereby minimizing year-to-year production peaks and valleys as well as stops and starts
   - efficiently allocate production requirements between government-owned and contractor-owned manufacturing plants.
4) Cross level stocks to avoid unnecessary procurement and/or minimize transportation cost.

In this respect, the OUSDRE plans to focus on minimizing the cost of directing procurement to selected ammunition producers to maintain an adequate balanced production base to meet peacetime, surge, and mobilization requirements.

The Defense Guidance remains one of achieving the required number of days of ammunition war reserve stocks and maintaining minimum sustaining rates of production for surge and mobilization purposes. During last year's hearing the classified Defense Guidance for FY 83-87 was provided. This guidance remains as presented. Each Service meets this guidance by FY87.

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In fulfilling my responsibilities as Deputy Under Secretary of Defense for Tactical Warfare Programs, I plan on emphasizing the importance of advancing munitions technology. Items such as Sense and Destroy Armor (SADARM) can provide us with capabilities here-to-for not available. Such munitions are vital to a flexible and devastating capability.

Incidentally, Mr. Chairman, the USDRE has decided to establish a new munitions office. The objectives of this office will be to:

1) Promote development of improved munitions

2) Accelerate deployment of improved munitions and

3) Insure cross service coordination

As you are aware, the current administration is extracting itself from micromanagement of ongoing programs. Thus, I will rely on the Service witnesses to respond to your questions on individual items. There are, however, two programs which I would like to address; the 9mm handgun and the VIPER weapon system.

The DoD is committed to standardizing on a 9mm handgun. Since the cancellation of the 9mm procurement the Services have worked together to rewrite the Joint Service Operational Requirement (JSOR) to assure that we can adopt a commercially available handgun. "Commercially available" as used here implies that the military handgun can be manufactured using a commercial production line to obtain an affordable price. The most significant change to the JSOR is that the reliability requirement for the new 9mm handgun be, "Superior to the current M1911A1" .45 caliber handgun. This change was directed to the Services in a recent DepSecDef memorandum which I recommended. The Services have also been required to provide the revised JSOR this month with an acquisition plan by 15 August 1982. Our intent is that the Army, as the executive agent, conduct another competitive procurement, which may include additional competitors, select a winner, and procure handguns in FY 83. The funds to initiate this procurement will be transferred from available FY 82 Coast Guard funds to meet their urgent need.

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The VIPER weapon system costs more than we desire. Further, it does not have the capability of an all aspect attack as desired by the Marine Corps. As we look at alternatives for the Congressionally directed test, there are several available in the near term. One example, the M72-750 Norwegian LAW is in the weight category of the VIPER and effectiveness is claimed to be near that of VIPER. The Army and Marine Corps will release a Request for Proposal (RFP) to obtain weapons under 20 pounds for test. All of these weapons will be jointly tested by both the Army and Marine Corps. The Army remains committed to a weapon that meets all or most of the requirements stated in the Improved Light Anti-Armor Weapon Required Operational Capability. The Marine Corps desires a man portable weapon which provides an all aspect attack capability within the 20 pound weight limitation. Thus, at this juncture we may end up with one or a mix of weapons for the Light Anti-Armor Weapon (LAW) role. To address the possibility of a mix of weapons and because of the high cost of VIPER we plan to conduct a VIPER program review to consider several alternatives. When this review is completed, we will advise you of any decision made.

There is one other prepared statement. Dr. Richard Webster, the Deputy Assistant Secretary of Defense for Logistics and Material Management will address in more detail the status of the SMCA program and the logistics aspects of the DoD conventional ammunition program.

Thank you for the opportunity to make this opening statement.

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SUMMARY STATEMENT OF DR. WEBSTER

Mr. ADDABBO. Dr. Webster?

Dr. WEBSTER. Mr. Chairman, you have allowed that my formal statement can be entered for the record. I would like to emphasize some of the points in that statement.

First of all, having taken over the job of Deputy Assistant Secretary for Logistics and Materiel Management, my ammunition functions have to do with the supply of ammunition, the maintenance, the renovation of that ammunition, storage and transportation, and the demilitarization of ammunition for disposal.

Last year the Under Secretary of Defense for Research and Engineering, Dr. DeLauer, and the Assistant Secretary for Manpower, Reserve Affairs and Logistics, Dr. Korb, mutually agreed that it would be in the best interest of the Department if we transferred the principal staff responsibility to my office; and as of September I assumed that responsibility.

Shortly thereafter, after intense negotiations with the services, we did release the ammunition policy directive in November, 1981, and concurrent with that I started to establish my own staff to be dedicated to single management ammunition oversight.

These are the actions that we took to change the way things were going over the previous seven or eight years.

These changes resulted in a new policy directive. Some of the points that were brought out in this policy directive—that we have already seen progress in—have to do with worldwide visibility of retail assets; we have improved asset visibility significantly. We now have given the Joint Chiefs the ability to make combat allocations of critical ammunition items:

We established a working capital fund for ammunition. Concurrent with this we went to industry, to our industrial base, and established an industrial advisory committee that provides us input on how to manage the industrial base better.

The Army established a jointly staffed headquarters element and since that time has received considerably better information on ammunition procurement programs. We are also establishing a DOD-wide automated ammunition data system.

Another specific progress element from the single manager is that they have written an implementing manual for the single management directive. There are 122 chapters in this manual. The manual is completed and is now under review.

General Burbules will go into more detail about the content of this manual later.

For the first time in the POM '84 submission we developed an integrated five-year defense ammunition procurement plan. This was based on the service inputs. It has been under review by OSD relative to the overall budget.

Another advantage of this plan is that it identifies additional economies for future buys since we have more accurate information on a consolidated basis.

We have also seen from my office a very positive attitude from all of the services in complying with this new directive. They are actively cooperating to strengthen this policy directive.

There is a very good close working relationship with the single manager.

We hoped, and we now see, that we will be reducing our maintenance backlog to a more manageable level. We think we can correct some of the accountability deficiencies, and we are taking a look at the packaging required for training ammunition.

We have developed and implemented an ammunition demand automated processing system which helps us to automatically process requisitions for ammunition.

We have developed a simulation system that can be used to plan a mobilization contingency or a war gaming exercise. This assists managers in developing plans for rapid deployment forces and for readiness assessments.

Looking to the future, after the first year of operation of the single manager—that will be in November of this year—we will make a thorough evaluation of the first-year progress, and we are going to implement a program to see where we can go from here in terms of increasing the responsibilities of the single manager.

My office has worked internally on a draft implementation plan. We have attempted to talk to members of your staff about this, and we will still be available to go over the details of this plan for next year.

In summary, I think we are doing very well. We are now getting the attention of Mr. Carlucci through his Council on Integrity and Management Improvement.

This is now an active item to be reviewed by the Council on a periodic basis to ensure that we are actually achieving economies and that we are increasing readiness.

From my personal standpoint, I think that we are making some pretty good progress in the single manager operation.

This is the last of the prepared statements. We now have the other members and myself available for questions.

The statement of Mr. Webster follows:

DR. WEBSTER'S OPENING STATEMENT

Mr. Chairman, Members of the Subcommittee:

As the Deputy Assistant Secretary of Defense for Logistics and Materiel Management, I have policy and oversight responsibility for several conventional ammunition logistics functions. These functions include: supply, maintenance, renovation, storage, transportation, demilitarization and disposal.

In September of last year, the Under Secretary of Defense for Research and Engineering transferred principal staff responsibility for the Single Manager for Conventional Ammunition to my office. Since that time we have taken positive steps towards improving the Single Manager operation. In November 1981, we published a revised Single Manager Directive which further strengthened the role of the Single Manager. Earlier this year, I established a dedicated staff to manage the development of the Single Manager.

The original Single Manager for Conventional Ammunition Directive was published in 1975 after more than a decade of problems, studies and attempted solutions, which included establishing a special ammunition group within the Office of the Secretary of Defense to deal with allocation and distribution problems.

Because of the size, complexity and sensitivity of the transfer and because of the poor storage conditions existing at some of the activities designated for transfer to the Single Manager, it was decided to accomplish the transfer in two Phases. Phase I, which was eventually accomplished in 1977, transferred the procurement and production functions for items approved for full-scale production, as well as custodial inventory accountability.

Since that time, efforts have been made to improve Single Manager operations under Phase I. Although guidance for Phase II implementation was originally issued in 1977, and several attempts had been made by the Army to develop implementing plans and Directives, there had been little progress toward Phase II implementation until the recent reissuance of the Directive. For example, provisions of the new Directive provide the Single Manager with worldwide visibility of retail assets. This permits the Single Manager to monitor distribution and permits the cross-leveling of assets. The Directive provides a capability for the Joint Chiefs of Staff to make combat allocation of critical ammunition items. It established a Conventional Ammunition Working Capital Fund which simplifies paperwork and controls assets during the production process. It established an industrial advisory committee of ammunition producers to aid the Single Manager in resolving procurement problems. It established a jointly staffed headquarters element to coordinate, and give greater visibility to Single Manager operations. It provides for timely receipt by the Single Manager of approved ammunition procurement programs and funds from the Military Departments. The Directive also provides for a standard DoD-wide automated data system for conventional ammunition logistics support.

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We realize that the revised Single Manager Directive does not transfer all supply management functions to the Single Manager; we purposely wrote the Directive to limit these responsibilities somewhat. This permits the Army and other Services the flexibility and time to move forward on an evolutionary basis. At the same time, the Directive gives us the latitude to move towards a full-fledged Single Manager as we determine it to be practical to do so.

The implementation of the Directive is progressing. The Conventional Ammunition Working Capital Fund is fully operational. An American Defense Preparedness Association Ammunition Advisory Committee is established. A jointly staffed management organization, known as the Executive Director for Conventional Ammunition and dedicated to the Single Manager operation, is established and operational in the National Capital Region. Worldwide asset visibility of common Navy, Marine Corps and Air Force items is being provided to the Single Manager. The implementing manual for the Single Manager Directive, consisting of 122 chapters, is completed and being reviewed by our staff. The Single Manager has for the first time developed an integrated five-year defense ammunition procurement plan based on Service input and provided it to the Military Departments for consideration and to the OSD for use during the Program Objective Memorandum review process. This is an accomplishment of significant merit in that it consolidates the five-year procurement plans of all the Services for those items assigned to the Single Manager. This will allow us to take advantage of economic buys and will result in substantial cost avoidances in the out years. Further, it shows a very positive attitude on the part of the Services towards the Single Manager and proves that a close working relationship is developing between the Single Manager and his Service counterparts. Also, the Single Manager and Services have determined jointly that it is feasible to pursue fully a standard worldwide ammunition management system and are proceeding to develop such a system. As we move forward, I believe that the Army will continue to organize, staff and resource the Single Manager to perform its support mission to all Services effectively and equitably.

Besides the required actions of the Directive, we have undertaken other actions to improve the Single Manager operations. These actions are based on recommendations from your Committee, the Government Operations Committee, GAO and our initiatives. For example, the Services and Single Manager have funded for the reduction of the maintenance backlog to a manageable level. The Services and Single Manager are correcting accountability deficiencies and assessing the degree of packaging required for training ammunition. The Single Manager has developed and implemented an Ammunition Demand Automated Process system which processes customers (CONUS) requisitions automatically and reduces the total response time to the customer. The system also contains the logic to substitute some other item for that requested by the customer if the requested item is in short

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supply or not available. The Single Manager has developed a detailed simulation system to assist in planning for mobilization contingencies and for conducting logistics wargaming. This system, called the Ammunition Distribution System, makes shipment decisions under various conditions in the simulated mobilization scenario. This system assists managers in developing plans for Rapid Deployment Forces and for readiness assessments. In addition to these actions, we are including ammunition under the DoD physical inventory and interchangeability and substitutability programs. We have made changes to our standard logistics systems that improve the processing of ammunition transactions and are developing for the first time a supply catalog for ammunition.

Within OSD we will make a thorough evaluation of the Single Manager operations after its first year of operation. The results of this evaluation will help us to determine the feasibility of increasing the responsibilities of the Single Manager. Except for the Services retaining essential responsibilities for determining and defending requirements, controlling item configurations, requisitioning ammunition to meet user needs, and maintaining that ammunition at retail levels, all other functions will be considered for transfer to the Single Manager with the ultimate decision resting on how best to support our combat forces. In the near term we are developing a plan to address the feasibility of strengthening the Single Manager with priority attention being given to the inventory and maintenance management roles. This will include a careful review of item assignments. My staff will work with the Services to assure these objectives are achieved.

In addition to these actions, the implementation of the Single Manager Directive and the determination of what additional functions should be transferred to the Single Manager will be reviewed by the Defense Council on Integrity and Management Improvement chaired by Mr. Carlucci with the highest level of representation from OSD and the Services.

In summary, substantial progress is being made in implementing the Single Manager Directive and several progressive actions are now underway to determine the feasibility of further strengthening the Single Manager and otherwise enhancing the performance of the Single Manager. I am convinced that a strong, efficient Single Manager is in the best long term interests of the DoD.

Thank you

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Mr. ADDABBO. Thank you very much.

As you are new boys on the block, I will give you just one admonition others have heard me give before.

Over the years the ammunition account has been used as the bank for reprogramming. We allowed one such reprogramming earlier this year because of extraordinary conditions. I said that would not be the practice.

We expect both of you to be the guardians of the ammunition fund and not be ready to release monies to be used for reprogrammings. That will not be looked upon favorably. In most cases the reprogramming will probably not even be considered unless they come up with new sources.

Dr. WEBSTER. We hope to do that. As a matter of fact, since we are going through our internal review on the POM-84 budget, this is one of the things we are working very hard to defend.

9 MM HANDGUN PROCUREMENT

Mr. ADDABBO. Dr. Adams, I commend you on your prepared statement, on page 3, you talk about the 9 mm handgun, which you know has the full support of the committee and is fully supported by various studies that have been made. You say the services have been required to provide a revised JSOR by July 15, 1982 and an acquisition plan by August 15, 1982.

This is July 15th. Have they complied?

Dr. ADAMS. There will be about a two-week delay, Mr. Chairman.

In fact, in my statement I modified that to say this month. We should get that at the end of the month, but it is very close to reaching the final form. I just checked on that the day before yesterday.

Mr. ADDABBO. I hope you would ride heavy on it. I understand it was supposed to be due last month, and that would make another month's delay.

SINGLE MANAGER FOR CONVENTIONAL AMMUNITION

Since 1975 the Secretary of the Army has been assigned the Single Manager for Conventional Ammunition. The objective of the single manager is to coordinate the ammunition programs of all the services and improve efficiency and effectiveness.

Phase II of the Single Manager was to have been implemented in October, 1979, but, as a result of persistent foot-dragging on the part of both OSD and the services, a Phase II directive had not been issued as of last year's hearings.

Because this committee supports a strong and efficient ammunition program, a restriction was put in the committee bill last year to require a Phase II directive by January 1, 1982.

On November 17, 1981, one day after the committee's report was issued, a revised single manager directive was signed.

What are the principal improvements or changes in the new directive?

Dr. WEBSTER. First of all, it establishes an executive organization within the Army and tasks that organization to look into all aspects of the single manager mission as spelled out in the policy directive.

The single manager staffed the organization, which has since developed an implementation manual and an integrated five-year procurement plan.

As I stated in summarizing my statement, there have been other peripheral benefits such as increased visibility, which makes looking at current ammunition assessment problems a lot easier.

We have been able to develop some systems—for example, the system we use for contingency planning and war gaming, which puts us in a better position should we get into some kind of contingency situation.

I think those are some of the major ones. We do recognize that as a result of increased visibility and consolidated budgeting we can expect to see some economies in terms of dollars.

We don't have a confirmed number yet, but we will in the future.

Mr. ADDABBO. OSD and GAO have consistently supported a strong phase II single manager program while the services have supported a weaker organization.

At last year's hearings there were two versions of the Phase II directive under consideration, one proposed by OSD and one proposed by the services.

Is the signed directive closer to the service version or the ODS version?

Dr. WEBSTER. I think from your standpoint it would probably be closer to the service version in that we did allow the retention of management of retail stocks and service peculiar items. That, however, is not a closed issue. In our follow-on evaluation we will continue to look at elements like these to determine the best position to take.

INTEGRATE AMMUNITION PLAN

Mr. ADDABBO. Dr. Adams, your statement says the single manager prepared a five year integrated ammunition plan for use by OSD staff during consideration of the fiscal year 84–88 POM. Who actually prepared that plan?

Dr. ADAMS. The services prepared individual plans, and then the director of the new office of executive director of conventional ammunition integrated that whole plan.

Mr. ADDABBO. Were any recommendations made by the Director to the services to in any way change a certain portion of their '84 budget?

General BURBULES. Yes, sir. We made fifty recommendations to the services. Those recommendations are being studied by the services. In some cases they have been decided upon. In other cases the services must wait until a program decision is made on or about the fifth of August to determine what the impact will be on the budget as to whether or not they will adopt those recommendations.

The recommendations represent a potential savings of $33 million. However, those savings were looked at from economic aspects only, without regard to the impact on readiness. It is a function of the services to analyze whether or not they can fight the war if they adopt those recommendations.

They have to look at their own operational plans and determine what the impact will be on those plans.

Mr. ADDABBO. Does the single manager or his representative have the authority to force the services to accept the Director's recommended changes?

Dr. WEBSTER. He doesn't have the authority to force that. He puts together the consolidated service plan and does have the authority to go back to the services and discuss any possible changes with them. However, in the final analysis, the final approval of the ammunition budget is made by the Secretary, and, of course, I have the oversight responsibility to take any issues to the Secretary that we feel are in the best interest of the Department.

Mr. ADDABBO. So you, and the services, do not have the last word? You have oversight? You can make changes?

Dr. WEBSTER. Yes, if we feel the POM guidance that we publish is not being followed, we will create an issue and take it to the Secretary and explain our rationale as to why the services should comply with the defense guidance.

Mr. ADDABBO. In other words, the single manager can only take his complaint to the Secretary and the Secretary can change the service's ammunition budgets?

Dr. WEBSTER. Yes, he can also take it to the Secretary of the Army.

Mr. ADDABBO. In other words, what I am saying is the single manager, the director, or you, cannot direct the services. The services have the right to go their free and easy way as in the past unless the Secretary of the service directs otherwise, or the Secretary of Defense?

Actually, on a scale of one to ten, we maybe have a single manager program that is a one.

Dr. WEBSTER. I think even if you went further in terms of giving the single manager budget management, he would still have the problem of negotiating with the service secretaries in terms of budget allocations

ACCEPTANCE OF SINGLE MANAGER RECOMMENDATIONS

General SKIBBIE. Mr. Chairman, if I may make a comment? I believe if you assess those recommendations, you will find out some of those recommendations were accepted immediately by the services to whom they are recommended. Specifically the Marine Corps, for instance.

Some of them come into the area where you have a conflict between defense guidance and the efficiencies that the single management might see.

For instance, one of the recommendations to the Army was to cut back our production in one area so that we could use those resources to increase it in another.

It was a very valid recommendation on the face of things. However, we couldn't cut back if we were to achieve the defense guidance of ——— war reserve by 1987. So that is what General Burbules meant by saying it is up to the service to assess the readiness aspect. In that case we couldn't. There will be other cases where we will be able to comply with their recommendation, but you can

get caught between a rock and a hard place, defense guidance saying you have to get ——— by 1987, and possibly chances for rebalancing your work up.

Mr. ADDABBO. I can understand that. I can see where the services could be right. I cannot envision the single manager giving a directive to the services, jeopardizing or in any way reducing readiness or the effectiveness of the supplies or the service to conduct their part of the war.

The gentleman from Florida?

Mr. YOUNG. Thank you very much, Mr. Chairman.

Gentlemen, both the Army and Marine Corps are engaged in developing a variety of individual weapons for antitank, bunker busters, and urban warfare purposes.

VIPER ANTITANK ROCKET

The Army is procuring Viper as an antitank weapon while testing alternatives. The Marine Corps has budgeted procurement funding for Viper in fiscal year 1983, but they may buy something else instead.

I remember as a member of the Armed Services Committee ten or twelve years ago I went out on the limb for the Cheyenne helicopter. All of a sudden the people that were going to use it decided they didn't want it and left me out there on the limb.

Last year when the Viper became a real problem, I got on the white charger and helped you get approval to go ahead and begin the Viper program.

Not I get the feeling that the Viper really isn't going to do everything you told me it would do last year.

Can you tell me something about the Viper, what it was supposed to do and what it isn't going to do now?

General SKIBBIE. I will be happy to take that, sir.

We would hope we would not leave you out on the limb. We would never do that intentionally. We do appreciate your support.

I think the Viper is going to do everything we told you that it was going to do last year.

It exceeded its penetration requirements. The original penetration requirements placed on it were ———. It attained ———.

Where it did fall slightly short was when you combine penetration with accuracy and all the other elements that come into play in what we call the single shot kill probability.

We asked for a ———, and it attained a ———. The user in the Army felt that was close enough primarily because we have a situation where we stopped buying the former antitank weapon, the LAW, because of Viper coming in very imminently, and our stocks were being drawn down.

We actually curtailed training to slow that drawdown.

In addition, Viper is an appreciable improvement over the original LAW. ———.

We felt that was adequate.

Mr. YOUNG. Excuse me, General, might I ask about that specific point?

General SKIBBIE. Yes, sir.

Mr. YOUNG. Why do you originally intend to ———?

General SKIBBIE. ———. I am not sure we felt that strongly about it in the first case.

I have attempted to audit that. It is part of a user specification that was included in the requirement.

Again the user had to assess that. He has to determine whether it will meet his requirements, and he, not the developer or the part of the Army that developed the requirement, should make that waiver.

The other thing I would say is that I would certainly agree with Dr. Adams that we are happy with the cost of the Viper and we are working zealously to get the cost down.

Mr. YOUNG. Would you compare your estimated cost and what you expect the cost to be now?

General SKIBBIE. The cost that we testified to last year has really not changed that much. We testified to, I believe, in the $800 range. It is $787 in fiscal year 81 dollars on a recurring cost basis.

Mr. YOUNG. When you were buying the LAW, how much was the LAW?

General SKIBBIE. The last time we bought the Norwegian M72A3 LAW was in fiscal year 1981. The cost per round was $187, which included $49 of government-furnished material provided by the Army.

However, that is a weapon that can only penetrate ——— of armor.

I have a viewgraph here.

The comparison between the Viper and the LAW is dramatic when you look at what it can do. These are simply bars that compare the LAW with the Viper against various targets.

[CLERK'S NOTE.—Classified chart removed.]

The white bar is the LAW. That is what a LAW can do. Against a ——— you can see that the difference in effectiveness of Viper vs. LAW is probably at least ———. That is the ultimate measure of effectiveness, single-shot kill probability. It tells us how much chance we have of killing a ———.

You can see that we needed to do something to replace the LAW, and the Viper was what we developed.

Again I say we would like to have it cheaper. I think we are going to get it cheaper because of the congressionally directed test.

Mr. YOUNG. Before you take the chart off, are these actual test results now, or are these as far as it relates to the Viper projections, your estimates?

General SKIBBIE. They are tests against equivalent armor penetration. Then it is averaged, what we call a cardioid average around the tank.

So it is a combination of tests and calculations, tests against ———.

We will test it against an armorplate that is of that equivalent thickness and then use a computer simulation to average it around the circumference of the tank.

VIPER WEIGHT

Mr. YOUNG. One of the strong selling points for the Viper was the fact that it was going to be light?

General SKIBBIE. Yes, sir.

Mr. YOUNG. The troops would carry it, use it, discard what was left over, and move on and not have to worry about carrying a tube of some type, a launcher, or anything like that.

What has resulted in your weight expectations?

General SKIBBIE. We asked for 7 pounds. The best we could get was 8.9 pounds. Again, the user accepted that.

The LAW did weigh in the 7-pound range. If you look at the alternatives, you will see there aren't any others in that weight class until you get up into the 14-pound range. There you have the Armbrust, but its penetration currently is only comparable to the ———.

Generally, as you get heavier, you can increase your penetration. It is a function of the amount of explosive you are placing on the target. Our users feel that—just as you stated—we want a disposable weapon; we want it simple; we want it proliferable. We want to be able to issue it not only to an infantryman but also to a clerk, a baker, a cook, throughout the entire force structure and not have it his dedicated weapon. If you make it a heavier weapon, you can make it so heavy that that is the only thing he can carry so that you require a dedicated gunner. If you make it so complex that he has to spend extensive time training on that weapon, then you have affected your force structure.

For instance, there is a difference in concept between the Marines and the Army. It is not always understood. Our squads are smaller than Marine squads. There are definite reasons for that. If we are pushed into buying an anti-armor weapon that requires a dedicated gunner, you would have to add at least one man to each squad in the Army.

That would add approximately ——— men to the squad structure of the Army.

Those ——— men are going to have to come from some place and they are going to cost money. So we weighed portability versus penetration. I think we have also done ourselves a disservice by calling it an anti-tank weapon. I think it would be more accurately described as an anti-materiel weapon.

You are not going to find a tank in your rear lines, but you might find a light armored vehicle that this would easily take out; you might find an armored personnel carrier. That is the first bar over there, the BMP. You can see what Viper does to a BMP compared to a LAW. All those things considered, I don't think the situation has changed dramatically since last year.

We are supposed to get our first deliveries of Viper in November or December of this year.

We recently heard from the contractor that they were on schedule and on cost for that first contract.

The second contract should proceed consecutively after that.

Mr. YOUNG. Your expectations were that the Viper would have a considerably larger, longer effective range than the LAW. Has that been borne out?

General SKIBBIE. Yes, sir. The LAW has an effective range of 150 meters. Viper has an effective range of 250 to 300 meters.

We fired it at longer ranges and got reasonably good accuracy at the longer ranges, out to and in excess of 400 meters.

MARINE CORPS LIGHT ANTITANK WEAPON

Mr. YOUNG. I would like to ask the gentleman from the Marine Corps about the water testing.

Your requirements would be somewhat different and water would be an integral part of your activity. What is your concern about the fact that this ———?

General CARSON. We were concerned about it, but we are working with the Army now. It is still in our 1983 program. I don't think that we can say we are going a different route. We are still working together on it. We are still considering other programs, but I wouldn't say that we are going separate ways at this time.

Mr. YOUNG. What other programs are you considering that you might go to rather than the Viper?

General CARSON. We have an R&D effort on a SMAW at this time. Until the tests and shootoffs are completed, we have labeled our line in 1984 "a light antitank weapon" as opposed to calling for a specific weapon.

Mr. YOUNG. On the question of the SMAW, it seems to me last month Deputy Under Secretary Wade suggested to the Navy and to the Army that the SMAW and the MOUT requirements be harmonized. Can someone speak to what is the status of this JSOR?

Mr. BERNARD. The MOUT requirement is a generic requirement for mobile operations in urban terrain—city fighting. The SMAW is generally considered a weapon for MOUT operations. The Marine Corps has an established requirement for the SMAW, and the Army has been looking very carefully at what their requirements are for MOUT. These have been going on for a good many years.

The MOUT weapon is capable of doing more than just knocking down walls in cities. It is a bunker buster. Before the complete consideration for how the whole family of MOUT weapons will be determined is done, the Marine Corps and the Army will have to harmonize what they consider MOUT requirements are in total.

Mr. YOUNG. Am I mistaken even when I suggested that Secretary Wade had written to the Navy and the Army requesting this harmonization?

Mr. BERNARD. No, sir. That is absolutely correct and very important. There have been study groups, and I have been on one of the committees for several years on harmonizing MOUT requirements.

Mr. YOUNG. It is my understanding an updated Joint Service Operational Requirement was to have been completed by August 1st of 1982.

Mr. BERNARD. I would certainly like to put into the record where the MOUT requirement is.

Mr. CHAPPELL. Will the gentleman yield?

Are both the SMAW and MOUT capable of killing tanks?

General SKIBBIE. I don't believe so. It is a different concept. It would put a large amount of explosive against a flat surface and then explode it and blow a hole in the relatively thin surface; but a tank killer generally uses the Monroe effect, the shaped charge effect to use chemical energy to actually melt a hole through it.

So, basically it is possible your SMAW or MOUT warhead might blow a hole in a thin part of the tank. You probably would get some spalling on the inside.

You wouldn't get the same penetration you do from an antitank weapon.

Mr. CHAPPELL. From this line of questioning, I gather that we are trying to show that both SMAW and MOUT are designed to do pretty much the same purpose.

General SKIBBIE. Yes, sir, but MOUT is the generic term. SMAW is a specific weapon that the Marine Corps is looking at.

Mr. CHAPPELL. Okay. I see.

Mr. YOUNG. Well, I happen to have a copy of the memorandum from James P. Wade, Jr., addressed to the Assistant Secretary of the Army, Research, Development, and Acquisition, and the Assistant Secretary of the Navy, Research, Engineering and Systems, Subject: Army and Marine Corps Assault Weapons dated 22 March 1982.

The last sentence says—and I will give this to you so you can respond to it—it says this review should be completed and an updated document submitted by 1 August 1982.

Let me provide you with a copy of this and get you to respond for the record just where we stand relative to that request.

Dr. ADAMS. Very good.

[The letter follows:]

THE UNDER SECRETARY OF DEFENSE,
Washington, D.C., March 24, 1982.

Memorandum for Assistant Secretary of the Army (research, development and acquisition), Assistant Secretary of the Navy (research, engineering and systems).
Subject: Army & Marine Corps Assault Weapons.

The House Appropriations Committee (Report No. 97-29 on fiscal year 1981) noted that the question of Army participation in the Marine Corps Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) program had not been settled and that questions exist over the affordability of a weapon program unique to the Marine Corps. Although the HAC recommended that no supplemental funds be provided, the funds were appropriated (Reference Joint Conference Report No. 97-124). The appropriation of these funds, however, does not eliminate the concern expressed by Congress and we need to address the issue.

The requirements for the Marine Corps Shoulder-Launched Multi-purpose Assault Weapon (SMAW), and the Army weapon for Mobile Operations in Urban Terrain (MOUT), should be harmonized if possible.

I would like the Services to reevaluate the requirements for an assault weapon (SMAW/MOUT) in conjunction with a review of Light Anti-Armor Weapon (LAW) requirement documents. The Armaments Munitions Requirements and Development (AMRAD) Committee will participate in this requirements review process to obtain an updated Joint Service Operational Requirement (JSOR) document covering LAW as well SMAW/MOUT requirements. This review should be completed, and an updated document submitted by 1 August 1982.

JAMES P. WADE, Jr.

[The response follows:]

The Army and Marine Corps have not yet officially responded to our 22 March 1982 request for a Joint Service Operational Requirement (JSOR) document for an "Assault Weapon" nor the feasibility of combining this requirement with the Service requirements for a "Light Anti-Armor Weapon (LAW). We are aware however that the Marine Corps intends to hold firm to their need for a separate weapon for the assault role (their Shoulder Launch Assault Weapon (SMAW)) and a LAW capable of an all aspect attack. The Army continues to demand lighter weapons in both categories, plans to establish their assault weapon requirement in about one year, and have reaffirmed their 1975 Required Operational Capability for the LAW. My

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Armaments Munitions Requirements and Development (AMRAD) Committee will harmonize these requirements to the maximum extent possible.

Mr. YOUNG. Please answer the following questions for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Young and the answers thereto follow:]

SMAW

Question. The Marine Corps awarded a full scale development contract for SMAW on May 13, 1982.

a. To whom was this contract awarded and what weapon is involved?

b. Does awarding this contract not prejudge the outcome of the revised JSOR?

c. To what extent do the requirements in the SMAW contract incorporate the probable requirements of the revised JSOR?

d. Is the Marine Corps considering using a variation of the SMAW as an anti-armor weapon instead of the Viper?

Answer. a. The Marine Corps awarded a full scale development contract to McDonnell Douglas Corp. for the merger of a dual mode warhead (designed at Naval Surface Weapons Center, Dahlgren VA.) to the Israeli B-300 launcher and propulsion system.

b. The Marine Corps has an urgent requirement for a weapon system capable of breaching masonry and earthen/timber bunkers. Additionally, this weapon will have application in military operations in urban terrain (MOUT). A Marine Corps Required Operational Capability document was signed in September 1981. The Army is continuing to examine their requirements for a weapon system designed for military operations in urban terrain. As a result, a JSOR does not currently exist.

c. The SMAW as currently designed, will satisfy the Marine Corps' ROC for a bunker busting weapon system. The contract for the merger of the dual-mode warhead with the B-300 launcher and propulsion system will produce a weapon for developmental and operational testing during 2nd and 3rd quarters fiscal year 1983.

d. As a non-disposable weapon, SMAW will be assigned to the Assault Squad, Weapons Platoon of the Rifle Company. It will be a Table of Organization (T/O) weapon requiring a dedicated gunner. Each assault squad will contain 3 2-man teams with a total of 6 SMAW's per squad. A preplanned product improvement program will be aimed toward the development of a family of warheads for SMAW. The Marine Corps still has a requirement for a lightweight disposable anti-tank weapon that would be issued as a "wooden round" item of ordnance. The Congressionally directed joint test and evaluation of lightweight anti-armor weapons is aimed toward identifying a system that would best satisfy the Marine Corps' and Army's needs. VIPER remains a candidate system for the Marine Corps as a lightweight system; however, not until all other available systems are tested and evaluated will the Marine Corps make a final decision.

Question. What are the current estimates for costs of developing and procuring SMAW?

Answer. Current estimate for the costs of developing and procuring SMAW is approximately $204.8 million. Costs include $31.4 mil-

lion for research and development, $27.3 million procurement of launchers, $144.6 million for ammunition, and $1.5 million for operations and maintenance.

Question. What plans has the Army made to procure SMAW?

Answer. SMAW, a reusable launcher weighing about 25 pounds in a ready to fire configuration, requires a dedicated crew. The Army cannot afford the personnel to man this weapon and does not view the need for SMAW with the same urgency as the Marine Corps.

When the HAC report (97-333, 16 Nov 81) denied money for Army MOUT weapon development and directed the use of SMAW, the Army chose to reevaluate its need for a MOUT weapon. This effort is underway and expected to be completed in third quarter fiscal year 1983.

Question. Last year the Marine Corps deleted funding which had been budgeted for Viper procurement because of the low priority and high cost in comparison to other programs. The fiscal year 1983 Marine Corps budget includes $9.2 million for procurement of Viper. What are the current intentions for the use of this money?

Answer. Current Marine Corps intentions are to delay the fiscal year 1983 procurement of the Viper pending the outcome of the Congressionally directed Foreign Weapons Evaluation test being conducted jointly by the Army and Marine Corps. At the conclusion of the Foreign Weapons Evaluation, the Marine Corps will procure the weapon which has proven most effective. That could be either the Viper or an alternate anti-armor weapon system.

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

VIPER PROGRAM REVIEW

Mr. YOUNG. Dr. Adams, in your statement you say OSD will conduct a Viper program review to consider several alternatives.

When do you expect that review to take place?

Dr. ADAMS. We have not set a date yet, but I would anticipate it as within the next 30 to 60 days.

Mr. YOUNG. Who would be involved in that review?

Dr. ADAMS. We will have the service representatives there. I am sure General Skibbie will be present. Dr. Wade will chair the meeting. I will be present. Members of my staff will also be present.

Mr. YOUNG. Can you tell us about any specific alternatives that might be considered?

Dr. ADAMS. We want to review the cost question. We want to review the test plans that are to be conducted in connection with the shootoff tests of alternative systems to Viper. We will review the plans for the Army and the Marine requirement. We will consider changes in production rates for the current Viper.

Does that respond to your question?

Mr. YOUNG. Really, what I was looking for was anything you could tell us about any specific weapon or piece of equipment that you might be considering.

Dr. ADAMS. The Viper itself, of course, will be addressed in detail.

In addition, we would review the test plans for the shootoff, and those plans should identify the potential competitive weapons that would be foreseen for the upcoming tests.

Mr. YOUNG. Is there a possibility that we might even see a decision to move ahead with the development of something entirely new?

Dr. ADAMS. Not as a result of these particular tests. Any decision on that would have to await the shootoff tests which are planned to be completed by 31 July 1983.

Mr. YOUNG. Shootoff tests between the Viper and the LAW?

Dr. ADAMS. There will be Viper and at least one other competitive weapon. The Norwegian LAW appears to be one of the competitors. There could be others. Right now I am not sure that there is another weapon in the weight range of 6 to 7 pounds, which is the stated weight requirement by the Army. There will also be weapons to meet the Marine Corps requirement of 20 pounds or less. I cannot tell you specifically which weapons they might be at this point.

VIPER ALTERNATIVES TESTING

Mr. YOUNG. Earlier in the year the committee was told that there would be an advertisement in the Commerce Business Daily prior to May 15th of 1982 and that testing would begin in August.

Can you tell me the status of that program?

General SKIBBIE. I can, sir.

That announcement came out on the 14th of May in the Commerce Business Daily and was subsequently amended on the 20th of May.

Basically that announcement simply said the services are interested in procuring for comparative tests systems that weigh X pounds or less for this mission.

Since that time we have slowed down for a couple of reasons. If we go back a year ago when this test had its genesis, it was more of a Consumer Report type test. Originally it was envisioned to prove or disprove the widely varying claims of all of the competing contractors who were attempting to compete against Viper.

Armbrust was working the Hill very heavily, making some very drastic claims. Several other contractors were making similar claims. So the concept of the test was, hey, you people, let's see if you can put your weapons where your mouths are or your advertising is.

That was the idea of that test.

Subsequently, when the Joint Committee forwarded the final recommendation to the Army, it said, "Include the Marine Corps requirements," and that enlarged the spectrum somewhat. Subsequent to that there was an interpretation that we should complete a procurement decision by July, 1983, when the test was supposed to be completed.

Now implicit in a procurement decision is that you have done what we call a development test and an operational test. It is a very extensive test involving large quantities of funds. We felt that it was tacitly impossible to do that in that time, and it has taken considerable time to dissuade people from that interpretation.

We evolved from that into an interpretation that the production decision must be made prior to commitment off the fiscal year 1984 funds.

Again you get into the extensive tests required of all weapons—not just this one, but all weapons—before you can give one to a soldier and have him expect to safely fire and that it meet all the other requirements that you place on it:

Safe to carry in a helicopter, safe to drop off the rear end of a truck, all the numerous things that weapons must entail in actual use.

We felt that if you pushed those requirements too much—the procurement decision too close—we would be flying in the face of what we thought the intent of Congress was, namely, to see what other competitors are really out there. if you make your time constraints so tight that nobody can meet them, then you won't have any competitors. So we have attempted to dissuade people from those very restrictive interpretations of the language. We have to some extent.

However, that ultimate requirement still remains: we must be able to reach a procurement decision. That is a change from the Consumer Report-type test.

If you are going to reach a quick decision, you must ensure that you comply with all the procurement regulations and treat everyone fairly and equally so that there can be no protests, no attempts to reverse the whole procurement decision as we have had in some procurements in the past, and that is why we have slowed down and are being extremely careful.

Right now we have developed evaluation criteria just as you would in a normal procurement acquisition strategy so that we can evaluate any one of these competing systems, whoever they may be, and if one of them is better than Viper and if it is cheaper than Viper, then we will be able to fairly and equitably select it for an alternative procurement.

Mr. YOUNG. Is the alternative testing program fully funded in the 1983 budget?

General SKIBBIE. It is not funded in the 1983 budget. We have submitted a reprogramming request because the original guidance—the original language from Congress—was to do it within available resources. We felt that required us to reprogram. That reprogramming request is in the Office of the Secretary of Defense awaiting transmittal up here.

Mr. YOUNG. Will that reprogramming then fully fund the alternative?

General SKIBBIE. To the best of my knowledge. There may be some 1984 funds that might be required for ultimate procurement actions, but I think the test is well above 90 percent funded by that reprogramming.

Mr. YOUNG. Mr. Willson just points out the reprogramming would not be for 1983 funds. It would be for 1982 funds.

General SKIBBIE. That is right. If I said 1983, I meant 1982.

Mr. YOUNG. My question was 1983. Are you asking for additional money in the 1983 budget?

General SKIBBIE. No, sir.

Mr. YOUNG. So the 1982 reprogrammed funds will take care of the alternative testing?

General SKIBBIE. Yes, sir. We felt we should have those funds in hand before we started down the path.

Mr. YOUNG. Let's clear that up.

Is there any request in the 1983 budget for funds for this program?

General SKIBBIE. There are requests for funds in the 1983 budget for Viper procurement. There are no funds in the 1983 budget for the comparative LAW evaluation.

Mr. YOUNG. Should there be?

General SKIBBIE. I don't think so as far as we know right now, because I think the reprogramming will take care of it.

Mr. YOUNG. Thank you very much. Please answer the following questions for the record.

Thank you, Mr. Chairman.

[CLERK'S NOTE.—Questions submitted by Mr. Young and the answers thereto follow:]

AIR FORCE'S AIRFIELD ATTACK WEAPON

Question. The fiscal year 1983 budget includes $9.2 million to initiate procurement of an airfield attack weapon, an air-delivered munition capable of destroying enemy airfields. The Air Force intends to procure the Durandal weapon developed and produced by the Matra Corporation of France. The weapons will be procured offshore since the Air Force will probably have only a limited procurement and France will apparently not allow a U.S. licensee to manufacture it.

When questioned earlier this year, the Air Force was not sure of its procurement program beyond fiscal year 1984.

Has a firm procurement program been decided upon?

How many weapons will be procured and what is the total estimated cost?

Provide a procurement profile for the record.

Answer. The Air Force procurement program for Durandal is as follows:

	1983	1984	1985	1986	1987	Total
Dollars in millions	$9.2	$23.3	$87.5	$184.1	$195.1	$499.2
Quantity	350	840	3,000	6,000	6,000	16,190

Our procurement plan is reassessed annually during the POM development cycle. This program will provide the only effective airfield attack weapon in the near term. As a standoff weapon system is developed the level of penetrating weapons versus standoff weapons will be adjusted as appropriate. The French government recently informed us that U.S. licensed production might be approved; however, at the limited level of procurement we envision it may not be to our advantage to do so.

Question. This weapon is described as a interim solution to the airfield attack requirement.

What is the long range solution?

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What will it cost to develop and procure?

What are the current milestones for that program?

Answer. The Durandal can better be described as a near term solution rather than an interim solution. The Air Force views the long-term cost effective solution to be a mix of direct attack, terminal standoff, and long-range standoff weapons. Long-range standoff is most effective during early days of conflict while defenses are at full strength. Shorter ranged standoff weapons can be used to avoid terminal defenses after a defense suppression campaign has eroded enroute defenses. Then finally, direct attack weapons are the low cost end of the mix, appropriate when the defenses have been controlled or in parts of the world where defenses are of lesser density than in Central Europe. The Air Force is conducting a Tactical Weapons Study which is examining standoff weapons and their application across the spectrum of Air Force roles and missions. That effort is aimed, in part, at structuring that weapons mix, and should be complete this fall.

Question. In September, 1980, General Slay described the Durandal as follows: "The Durandal does not add any effectiveness to our force, because on an F-111 you can carry only 12 of them. It is a good munition, if it works, but we just can't carry enough. So, as a consequence, we came up with a negative factor for sorties on the United States side and it does not deny significantly sorties on the other side."

Why has the Air Force changed its position on Durandal?

Answer. General Slay's comments were based on the results of the initial Quick Look test results. Recent analyses and considerable additional testing have shown runway attack to be the most effective way to deny sorties. Durandal is the only available weapon which can be delivered from low altitude and high speed which will crater runways.

Question. Testing of the Durandal has demonstrated a reliability of only 60 percent. Why does the Air Force consider this acceptable?

Answer. Initial testing demonstrated 60 percent reliability. Improvement will be incorporated into production weapons which are designed to meet 80 percent reliability. The Air Force has an urgent need for a runway cratering capability, and Durandal is the only weapon available today which can do that job.

Question. What reliability improvements will be incorporated in Durandal and when will a hoped-for reliability of 80 percent be demonstrated?

Answer. A new main chute pyrotechnic delay has been incorporated. This will be demonstrated in December, 1982.

Question. How many Durandal weapons have been manufactured and sold to the French Air Force and/or other customers?

Answer. Over six thousand Durandals have been sold to a variety of countries; however, the French Air Force chose BAP-100, a similar but smaller runway cratering weapon, more suitable for their aircraft.

Question. Does this weapon require direct overflight of air bases which we can assume will be heavily defended?

Answer. Durandal offers a major improvement in effectiveness and survivability over existing bombs and their necessary delivery

tactics. The high speed low level delivery possible with Durandal decreases exposure to the defenses in comparison to the dive bomb or pop-up tactics needed with current MK-82/84 bombs. Durandal is a near-term solution; however, it will remain in the inventory after we acquire standoff weapons for use in lower threat environments or when defenses have been suppressed.

DEFENSE CONSOLIDATED GUIDANCE

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

Mr. CHAPPELL. Dr. Webster, let me cover some questions on the Defense Consolidated Guidance for Ammunition.

Last year we were told of significant changes in the Defense Consolidated Guidance as it related to ammunition procurement and the ammunition production base. The changes were described by Mr. Bernard as a very significant fundamental redirection by the new administration to place emphasis on the need for industrial preparedness, surge, and mobilization.

For war reserve objectives, the programming guidance in fiscal year 1983 was as follows: ———.

Special Contingencies not determined.

How does the guidance issued for the fiscal year 1984 budget differ from the guidance for fiscal year 1983 for war reserve stockpiles in each of these categories?

Dr. WEBSTER. Sir, I have Mr. Culosi here from our force readiness area. Mr. Culosi.

Mr. CULOSI. The guidance for 1984 does not change. It only changes in one respect—with regard to the days of sustainability.

That is, we do not specify the services must provide for a special contingency stockpile, although some of them do.

The intent of the guidance is to provide minimum levels of procurement, minimum objectives. So this year we in effect left the guidance the same as it was last year except that we did not explicitly identify the special contingency stockpiles.

Mr. CHAPPELL You didn't do anything on special contingencies? Had you determined that last time?

Mr. CULOSI. It was stated we had to determine that as identified by the services.

Mr. CHAPPELL. Your guidance is still for ———.

Mr. CULOSI. Yes; it is, sir.

Mr. CHAPPELL. In all cases?

Mr. CULOSI. Yes, for the NATO theater, the Korean theater, the RDF and Persian Gulf scenario.

COST OF COMPLYING WITH THE GUIDANCE

Mr. CHAPPELL. How much will it cost for the services to comply with the fiscal year 1983 war reserve stockpile guidance in the five-year program?

Mr. CULOSI. I think the total funding for sustainability needs to be broken out into several areas. If you are talking about the days of supply and the level of effort munitions, I think we are talking in the range of about ——— for those accounts for all services.

Mr. CHAPPELL. ——— over the five-year program?

Mr. CULOSI. Yes, sir, that is approximate.

Mr. CHAPPELL. How much of that is in this budget?

Mr. CULOSI. In the 1983 budget?

Mr. CHAPPELL. Yes.

Mr. CULOSI. I believe for that account roughly ———.

Mr. CHAPPELL. Is the fiscal year 1983 POM in full compliance with the fiscal year 1983 consolidated guidance as it relates to war reserve stockpiles?

Mr. CULOSI. Yes, sir, it is.

Mr. CHAPPELL. What is the estimated cost in the fiscal year 1984 POM for each of the services to comply with the fiscal year 1984 consolidated guidance for war reserve stockpiles?

You said it would be ———.

Mr. CULOSI. We expect the same amount, roughly maybe a billion more.

Mr. CHAPPELL. You took the ——— and divided it by five and came up with ——— each year, is that correct?

Mr. CULOSI. That is not exactly correct. The shortages I identify reflect shortages against an optimum mix of munitions for each of the services. Some of these items have been identified by the services and are not procurable in the five-year time period.

By virtue of the fact that newer, more modern munitions, not available for procurement, are just entering production, we will still have some of these shortages even after the five-year period.

Mr. CHAPPELL. Let me be sure I understand what you are saying. How much is in the 1983 budget?

Mr. CULOSI. I think approximately ———.

Mr. CHAPPELL. That is ——— in two years. You would have three to go for the ——— you are talking about if you achieved your objective?

Mr. CULOSI. About ——— of that would not be achievable in the time period.

Mr. CHAPPELL. That reduces it to ———.

Mr. CULOSI. That is correct.

Mr. CHAPPELL. That is because you cannot get the ammunition?

Mr. CULOSI. There is a requirement stated for newer munitions that are entering the inventory, coming out of R&D.

CURRENT WAR RESERVE STOCKPILE

Mr. CHAPPELL. Where we are right now? Are we up to the ——— supply?

Mr. CULOSI. Right now we are not.

Mr. CHAPPELL. Where are we?

Mr. CULOSI. I think in general across all services we have about, I would say, ——— days of support. That varies by service.

Mr. CHAPPELL. You are only about ———.

Mr. CULOSI. That is right.

Mr. CHAPPELL. What about the Marines? How many days?

General CARSON. On the average, considering all types of weapons, ——— days.

Mr. CHAPPELL. How about the Navy?

Captain MAYS. I would have to take that for the record.

[The information follows:]

In aggregate tonnage of assets versus requirements, the Navy has ——— of combat supply for OSD approved scenarios.

Mr. CHAPPELL. The Army?

General SKIBBIE. ———. That is with the fiscal year 1983 funded delivery period. What we have in the budget this year will get us up to ———.

Mr. CHAPPELL. The Air Force?

General BOWDEN. Between ——— days, sir. All munitions.

Mr. CHAPPELL. Does that include air to air missiles?

General BOWDEN. These are air to ground munitions, sir.

Mr. CHAPPELL. How about air to air?

General BOWDEN. I will have to provide that.

[The information follows:]

We will have ———. Because of the methods used to calculate air-to-air requirements, the inventory is not expressed in days of supply. It is expressed as a percentage of the total requirement needed to defeat a postulated threat.

Mr. CHAPPELL. Let's see what we have at the end of the 1983 budget.

General CARSON. At the end of the 1983 funded delivery period, ———.

Mr. CHAPPELL. The Navy?

Captain MAYS. ———.

Mr. CHAPPELL. Why is the Navy a little bit slower here than the Marines?

Captain MAYS. Obviously you have to assume funding constraints.

Mr. CHAPPELL. What about the Army?

General SKIBBIE. ——— days is at the——

Mr. CHAPPELL. The end of 1983?

General SKIBBIE. The end of 1983.

Mr. CHAPPELL. What is it now?

General SKIBBIE. ——— days now.

Mr. CHAPPELL. The Air Force?

General BOWDEN. We picked up about ——— additional days, sir.

Mr. CHAPPELL. When do each of the services, under your five-year plan, expect to get to the ——— supply?

Let's start with the Marine Corps.

General CARSON. Through——

Mr. CHAPPELL. As I understand it, you will have a shortfall because of certain restraints. I would like to know under your plan, if you are required to do it at the end of five, but you say you are not going to be able to get there, what will you be able to do, and why can't you get there?

General CARSON. Through 1987 it looks like ——— for the Marine Corps.

Mr. CHAPPELL. That is the end of the five-year period? How many days?

General CARSON. ——— sir.

Mr. CHAPPELL. The Navy?

Captain MAYS. Just a second, sir. At the end of the 1987 funded delivery period, approximately ——— but that would be limited primarily because of inability to complete production on new weapons.

We basically would achieve the ——— if we could count the production on the new weapons.

Mr. CHAPPELL. That includes the aviation ammunition, air to air?

Captain MAYS. Across the board.

Mr. CHAPPELL. How about the Army?

General SKIBBLE. ——— with the exception of five items. Three of those are new items that will come into production during that five-year period.

It is our understanding from guidance that you do not have to immediately jump up to ———.

We would have a normal production build-up.

The other two items that we don't comply with are items we have consciously made a decision to start phasing back because they will be replaced sometime during that period.

Mr. CHAPPELL. How about the Air Force?

General BOWDEN. The Air Force will have funded ——— of munitions in all categories. Like General Skibbie said, we will have selected items that will not be produced and will spill over into 1988 and 1989. I can provide those for the record if you would like, sir.

Mr. CHAPPELL. Please do so.

[The information follows:]

Based on current procurement planning funding levels all air-to-ground munitions will achieve ———.

AMMUNITION PROCUREMENT BOW WAVE

Mr. CHAPPELL. Let's follow up this other line of questioning. You are going to be up to ——— at the end of 1984, is that correct?

How does this apportion out? Aren't you going to have a bow wave if you aren't careful?

Mr. CULOSI. OSD has recognized that that might be a problem. Part of that bow wave is caused by the introduction of munitions in those years. We have raised some issues internally within the Department to try to get more of these ammunition items funded earlier.

Last year we raised that issue and were somewhat successful in eliminating some of that bow wave.

The President's budget does contain the bow wave that you talk about. We are again addressing this issue as we speak here. We have issues presented to the Secretary to remedy part of this problem. We are hopeful that the 1984 budget would make a further step toward achieving these objectives.

Mr. CHAPPELL. If I understand your 1983 to 1987 POM, in the first two years you are only providing for roughly ——— .

Mr. CULOSI. That is correct, sir.

Mr. CHAPPELL. Are you telling me that is what you intend to try to live with?

Mr. CULOSI. We are trying to remedy that problem. We are hopeful we can bring that ——— percent down to ——— percent after we are done with this summer's program review.

Recognizing we have about ——— percent funded in 1984, we still maintain the target date of 1987. The services have indicated

that they could execute that ramp, and so far they are on that ramp, 1983 being the first year.

What remains to be seen is what we do in 1984.

Mr. CHAPPELL. That is the same answer we got last year, isn't it?

Mr. CULOSI. I don't believe so.

Mr. CHAPPELL. Exactly the same answer we got last year.

Here is Mr. Bernard: "OSD has generated an issue for the fiscal year 1983-87 planning and budgeting process with ammunition programs which provides an alternative which adds funds to assure the service's ammunition programs meet the programming objective as stated in the defense guidance as provided in response to your previous question.

"This alternative eliminates the service's out year bow wave for ammunition by adding funds to the early years of the fiscal year 1983-87 five year defense plan to avoid unrealistically high funding levels in the out years. For the ammunition production base, we are proposing an alternative which would require the single conventional ammunition plan working with the services to determine what increases are needed in production capacity for conventional ammunition in items for surge and mobilization purposes and as a first step accelerate the design initiation facility for fiscal years 1983 to 1987."

But the initiative was not successful, right?

Mr. CULOSI. That is right.

Mr. CHAPPELL. A year later you are telling us the same kind of schedule. What are the initiatives which you are going to take?

Mr. CULOSI. We are continuing to press that. We offered the alternatives to the Secretary of Defense, who has more problems than ammunition.

Mr. CHAPPELL. It is a pretty important problem, isn't it?

Mr. CULOSI. Yes, it is. I know from personal experience. I presented that alternative to him. To that extent I have been a failure personally, but in his judgment he has developed——

Mr. CHAPPELL. We won't charge all of that to you.

Mr. CULOSI. He has developed a five-year program for ammunition consistent with what the services presented to him, and I think he is going to hold the services accountable for that program and depend on them to execute that program. To the extent that we don't do that, I guess we have failed again.

I am hopeful these programs will be executed, albeit with the bow wave that exists.

Mr. CHAPPELL. This next question may overlap a bit.

Last year we were told that the fiscal year 1982 budget would give us an overall capability of ——— supply in NATO, ——— supply in Korea, and ——— supply for the Persian Gulf. What will be the situation in each category for the fiscal year 1983 budget?

Mr. Bernard?

Mr. BERNARD. Mr. Chairman, I thought these were exactly the numbers that we just gave you.

Mr. CHAPPELL. As I understood it, that was overall. I am talking about NATO.

Mr. CULOSI. The answer to your question depends on distribution—how the assets would be distributed. We have a worldwide requirement, a ——— requirement for the three theaters. When

those procurements are met, the services will distribute those assets in fiscal year 1984-1985 when the munitions get delivered where the services think they are most needed.

I think a more accurate assessment is to try to evaluate—as you were attempting to do earlier—how far we are coming towards meeting the ultimate objective.

When we get those assets, we are certainly going to put them in the places where they are needed the most. I think the answer you received last year was based on what was existing in the theaters at that time.

I think if you want to know what is currently in each of these theaters, we can provide that for the record.

Mr. CHAPPELL. I wish you would. If I understand the thrust of this, it is that we are told the 1982 budget would give us—bring us a ——— supply in NATO, a ——— supply in Korea, and a ——— supply for the Persian Gulf.

I wonder if we are coming along and how far we missed that.

Provide it for the record.

General SKIBBIE. I can give that for Army.

Mr. CHAPPELL. Is that different from the other answer?

General SKIBBIE. We saw those numbers. We couldn't track those numbers. We were higher than that last year, and we are higher than that this year. It may be one of these aggregated numbers which is an aggregation of applies, oranges and lemons.

I can give it to you—a comparable aggregated number for the Army.

Mr. CHAPPELL. For tracking purposes, you might go back to the testimony in July of 1981 at the ammunition hearing. At that time the question was asked I guess of you, Mr. Bernard, "We talked about our ammunition posture in terms of our overall days of supply. Earlier this year the Army testified that the fiscal year 1982 budget would bring this overall posture to ——— days."

"How do you translate the overall posture to our specific capability for each of the contingencies?"

Your answer was, "Our specific capability is NATO ———.

That is what I am referring to if you want to relate that to this question.

It appears we are not making it, right? We are not on that kind of schedule yet?

Mr. BERNARD. Mr. Chappell, regarding your question about the bow wave, I think from the numbers you heard just discussed here, the Army is up on the bow wave and is not in as bad a position as the other services.

I would certainly get you those comparisons of the 1983 for the record.

[The information follows:]

The fiscal year 1983 Ammunition procurement program will result in the following combat capability at the end of the fiscal year 1983 funded delivery period: ———.

GUIDANCE FOR MAINTENANCE BACKLOG

Mr. CHAPPELL. The fiscal year 1983 Consolidated Guidance required that the Services eliminate their ammunition renovation

backlog by the end of fiscal year 1984. What does the fiscal year 1984 guidance say in this regard? Will this objective be achieved with funds in the current budget?

[The information follows:]

The Defense Guidance for the fiscal year 1984-88 program period directs the services to program sufficient resources to eliminate all ammunition maintenance, repair, or renovation backlogs by the end of fiscal year 1985 and maintain a zero backlog through fiscal year 1988. The funding in the fiscal year 1983 budget is consistent with achieving that objective.

GUIDANCE FOR PRODUCTION BASE

Mr. CHAPPELL. The fiscal year 1983 Consolidated Guidance also made significant changes in the rules for establishment of ammunition production facilities. Whereas the previous guidance provided only for facilities to produce the ammunition to be procured in the five year planning period, the fiscal year 1983 guidance allowed for competitive second source facilities to buy at economic production rates and provide an adequate surge capability. How does the fiscal year 1984 guidance differ from the fiscal year 1983 guidance as it relates to ammunition production facilities? While the guidance permits budgeting for additional faciliaties, the production base portion of the budget has not increased nearly as fast as the ammunition portion. Why?

[The information follows:]

The guidance for fiscal year 1984 is unchanged from fiscal year 1983 as regards sizing of ammunition production facilities. The ammunition hardware portion of the budget has increased faster than the production base portion because, in past years, the hardware budget was sufficient only to maintain our current production bases at a minimum sustaining rate (MSR) level. Until we are buying ammunition at a rate high enough to produce efficiently with current facilities, it doesn't make sense to expand those facilities. The production base sizing guidance for both fiscal year 1983 and fiscal year 1984 pertains to sizing of initial production facilities. Thus, we should begin to feel the effect of this guidance as new munitions are introduced into the inventory.

Mr. CHAPPELL. Mr. Wilson.

ISRAELI ANTIARMOR WEAPONS

Mr. WILSON. I had a couple of general things relating to the Israeli operation in Lebanon I was curious about.

Mr. CHAPPELL. Go ahead.

Mr. WILSON. This is for the Army.

I was in Lebanon recently. Do you have any information on the rounds used to destroy the ———?

General SKIBBIE. ———.

Mr. WILSON. I have some friends over there in the Israeli military. They have been trying very hard to sell us 105mm antitank rounds for our tanks. They maintain and we have said ours are superior to theirs and therefore we will not buy theirs.———.

General SKIBBIE. We do.

Mr. WILSON. We must have.

I wonder if you could get them to battle test it for us?

General SKIBBIE. What we have in the inventory now is called the M774, a long rod penetrator. If you are familiar with armor-piercing, discarding, SABOT rounds, we used to have a relatively short penetrator. This is a long rod penetrator.———.

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So at distances we feel we need that longer rod penetrator, and in both those cases we feel both our rounds, the one coming into the inventory now and the next one following on, are much better than the ———. For that reason we have agreed not to buy their rounds.

Mr. WILSON. Then that must make you feel very comfortable since their ——— round was able to destroy the ———.

General SKIBBIE. It does.

Mr. WILSON. For the Air Force, have the Israelis indicated any urgent need to replenish their Sidewinders? Sparrows?

General BOWDEN. I don't have any information on any requests, sir.

I will be glad to check on that.

Mr. WILSON. We did replenish some for the British in the Falklands, didn't we?

General BOWDEN. We did provide some requests for those missiles.

Mr. WILSON. Could you provide for the record if Israel has made any significant requests?

General BOWDEN. Just one second, sir. Lt. Colonel Frost?

Colonel FROST. No, sir.

[The information follows:]

There have been no requests indicating an urgent need to replenish either SIDEWINDERS (AIM-9L) or SPARROWS (AIM-7F).

General BOWDEN. The Navy?

Captain MAYS. I know of none.

ANTI-TANK ROUNDS

Mr. WILSON. I know they used at least 85 of them.

Back to the Army, on the Rapid Deployment Force, do we have sufficient quantities of the superior antitank tank round?

General SKIBBIE. The M774 just began coming into the inventory last year. I will get you the quantity that we have.

I would say no, we don't have adequate quantities; we certainly aren't up to quantities yet.

I have a better source. I think it is a question of how many tanks you will have with the Rapid Deployment Force.

Mr. WILSON. I would just be interested in the quantities overall.

Those are produced at a United States Army-owned facility?

General SKIBBIE. The M774—XM833 as of the end of the funded delivery period 1983—two years from now—will have ——— days of supply.

I think that would be reasonable if you ———.

The quantity as of the end of fiscal year 1982 funded delivery period would be about ———. So again I think if you concentrated those from all parts of the Army ———.

I think there was another aspect to your question.

Mr. WILSON. Do we call that the kinetic energy round?

General SKIBBIE. Yes, sir. You either have a kinetic energy round where you have a mass with a very high velocity, or you have a heat round, a high explosive antitank round, which defeats with chemical energy, which melts its way, using the Monroe effect.

Mr. WILSON. The kinetic energy round is the one that you talk about being superior?

General SKIBBIE. Yes, sir. They make different uses of kinetic energy rounds than we do. I understand in the Yom Kippur War they were firing at buildings with their kinetic energy rounds which I really couldn't understand.

Mr. WILSON. Maybe it is all they had.

General SKIBBIE. It seems to me there are better rounds—perhaps not as accurate, but there are better rounds—to knock buildings down with.

Mr. WILSON. Yes, but they were real short in the Yom Kippur War. They might have been down to those.

Were you surprised they ———?

General SKIBBIE. I wouldn't hazard a guess on that, sir. That is not my area of expertise. I don't think I was surprised. Knowing the Israelis, I felt that they were prepared for whatever the Syrians had.

Mr. WILSON. Apparently they were.

Dr. ADAMS. Mr. Wilson?

Mr. WILSON. Yes?

Dr. ADAMS. ———.

Mr. WILSON. I know. They are vague about it. They claim it and they won't show you any pictures. The tanks are apparently—they claim they haven't got them. I don't quite believe that.

———.

So I imagine they have one. I imagine we will probably get it. I imagine we will pay for it one way or the other.

General SKIBBIE. One other question you asked was whether we produce that M774 in the U.S. We do produce it. We produce it in Pennsylvania and Massachusetts.

ISRAELI B–300 BUNKER BUSTER

Mr. WILSON. One more question. Is there anybody with the Army that can tell me whether or not the Army has yet decided on—I know the Marines signed a contract a few months ago for something called the B–300 which is the bunker buster. Does the Army have anything to bust bunkers with?

General SKIBBIE. No, sir. Not in that type of weapon. We have a 165 mm assault gun mounted on our combat engineer vehicle which is a very large round, as you can imagine.

The B–300, of course, is a shoulder-fired weapon. It is in about the 20-pound weight range.

Mr. WILSON. Do you feel you don't have a need for that?

General SKIBBIE. No, sir. We were discussing that earlier. It is a question of the combat terrain. We feel that we do have a need for that. We have been directed by Congress and Defense to attempt to harmonize our requirements with the Marine Corps. As with our light anti-armor weapon, we have a problem making it—selecting a weapon that will require a dedicated gunner because we don't feel that we have the number of people in our squads where we can devote one man in the squad to carry an anti-armor weapon, another man to carry a MOUT or a SMAW.

We need to have them as riflemen in addition to those other functions.

I think the problem there is a difference in concept of force structure. We are working to harmonize that with the Marines. We are revalidating or relooking at our requirement right now.

General BOWDEN. Of course, the purpose of precision-guided air-delivered munitions—laser-guided munitions, Mavericks, and so forth—is to be effective against those kinds of targets, those bunker-type targets.

MAVERICK MISSILE

Mr. WILSON. How are you doing with the Maverick?

General BOWDEN. We are hanging tough with it.

Mr. WILSON. I know that.

General BOWDEN. We did cut back on our request for the initial production with the double IR from 400 to 200 the first year, but we are continuing with the program.

Mr. WILSON. How is it coming so far as effectiveness?

General BOWDEN. I have not followed those tests myself. I can provide you those. I have only worked that from the programmatic standpoint.

[The information follows:]

IR Maverick is proving effective. Based on DT&E and IOT&E results as of 30 Jun 1982, as reported in the SAR, IR Maverick accuracy (probability of target hit) is———.

Mr. WILSON. The general perception of the Maverick is it is not very accurate, so far. There are still a lot of problems with it.

General BOWDEN. We would disagree in general with that assessment.

The effectiveness tests that we have reviewed, looking at them in total, do not support that conclusion. That is why we are staying with our program.

Mr. WILSON. Do you consider, say, two years from now—for your A-10, for instance, that the Maverick will be a more effective weapon than the 30 mm gun?

General BOWDEN. Comparing the two munitions, I think they both have their place. 30 mm is a good armor-killing munition that you carry in quantity, and Maverick has its role; so I really can't respond any more to the question.

Mr. WILSON. If the Maverick is working well and your projections are correct, is it an all-weather tank-killer?

General BOWDEN. Right now, as you know, we only have the electro-optical, which is clear-weather capable. We are moving to the infrared mode, which will give us a better capability at night and under reduced visibility, in thin cloud type conditions.

Mr. WILSON. But the pilot has to see the tank to use the Maverick?

General BOWDEN. No. The Maverick's sensing system has to acquire it. You do that electronically with the infrared system.

Mr. WILSON. It is not radar-mounted?

General BOWDEN. No, sir.

Mr. WILSON. Would the same infrared system make the 30 mm gun effective at night?

General BOWDEN. Yes, sir, it could be tied to infrared.

Mr. WILSON. I assume everybody is paying a lot of attention to the Maverick program?

General BOWDEN. Yes, sir, our R&D people are working the program very hard.

Mr. WILSON. Who is the prime contractor for the Maverick?

General BOWDEN. Hughes.

Mr. WILSON. What is the official name for the smart bombs the Israelis use for anti-armor?

General BOWDEN. I don't know, sir. We use the MK-84 2,000-pound bomb or the MK-82 500-pound bomb with a laser—standard laser attachment, guidance system.

I will have to provide to you whether or not they bought those specific munitions and use them.

Mr. WILSON. There have been two different things I am a little bit curious about. One is the Israelis claim that they are ahead of us on technology, that they have developed themselves, that their state of the art is better than ours on the ability to destroy Russian surface-to-air missiles, like the SAM 6s.

I would be interested in having something for the record on that if we could.

Do they really have something better than we do? Did they buy what they have from us?

[The information follows:]

The Israelis' state-of-the-art in weapons technology is not better than ours. ———.

Some reasons for their success in this operation were the missiles were in place for over a year with precise locations known; the attacks were well coordinated; and the Syrians were not particularly competent. While the Israelis sometimes modify U.S. equipment for their own purposes, it does not represent any advance in the state-of-the-art; rather, they make minimal changes such as adding boosters to rockets to give longer ranges. ———.

The Government of Israel has purchased the following Precision Guided Munitions or "smart" weapons through the United States Air Force:

GBU-8, electro optically guided, 2,000 lb. warhead.
GBU-10, laser guided, 2,000 lb. MK-84 warhead.
GBU-12, laser guided, 500 lb. MK-82 warhead.
GBU-15, electro optically guided, 2,000 lb. warhead.
AGM-65 A/B electro optically guided, 125 lb. warhead.

SENSE AND DESTROY ARMOR

Mr. WILSON. The other thing is, what is it, "search and destroy armor?"

Colonel CHEN. "Sense and destroy."

Mr. WILSON. I understand they maintain they used a lot of that in this war and we don't have anything operational in that area. I am curious about that.

Dr. ADAMS. Mr. Wilson, I saw the article that indicated what you have just said, that there was evidence that they used a weapon of that type.

We have not been able to ascertain that is the case as yet. Your statement is correct. We do not have that weapon yet deployed. It is in development.

Mr. WILSON. Do any of you know how the Israelis destroyed the SAM 6s or does the United States—have they disclosed that to our intelligence or military people?

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Dr. ADAMS. We have been trying to get information on that, but as of now I don't really know.

Mr. CHAPPELL. Didn't they use a Drone approach?

Mr. WILSON. Two Drones, I think.

Mr. CHAPPELL. They fired it up and sent planes in to get the SAM launched to the base?

Mr. WILSON. There was one account they used two Drones on each one. That they attacked them with Drones.

Dr. ADAMS. Yes, I read that account.

Mr. WILSON. Are the Israelis just not very forthcoming with that kind of information?

Mr. CHAPPELL. Is that your department?

Mr. BERNARD. Mr. Wilson, because of our skimpy intelligence, we have ———.

Mr. WILSON. It would seem to me that considering the fact the Israelis will be completely dependent on us for replenishment of many, many things in a very short time, that they would be forthcoming on those things without you having to pay a price for it.

I think maybe that ought to be brought to the attention of the National Security Adviser. They were forthcoming after the '74 war, were they not?

Mr. BERNARD. Absolutely. In fact, after the 1967 war we got information in a hurry. Then people started saying "Let's see what it is worth." There was an immediate exuberant exchange of information. Then there was a period of time where we started looking at the value of it, and finally there was a complete disclosure. ———.

Mr. WILSON. Just for your information ———.

Mr. CHAPPELL. Might be a good provision.

Any more questions?

Mr. WILSON. That is it.

Mr. CHAPPELL. Mr. Robinson?

CARE AND MAINTENANCE OF AMMUNITION

Mr. ROBINSON. Last year, the Committee held extensive hearings on the care and maintenance of conventional ammunition. The hearings were based on preliminary results from a GAO investigation done at the request of this Committee. The Committee's request for this investigation was based on the belief that while substantial increases were being requested for ammunition procurement it was essential to assure that assets already in the inventory were adequately maintained. The hearings revealed numerous deficiencies. For example:

There are about 500,000 short tons of ammunition which are considered unserviceable, about 25 percent of the entire inventory.

The program under which the Army budgets for the care and maintenance of ammunition has only been about 30 percent funded in the past.

The Army consistently miscodes the condition of its ammunition inventory so that the number of rounds requiring major renovation or rework is significantly understated.

Long delays—amounting to several years—occur between the time that ammunition is declared for disposal and it is actually dis-

posed. Navy ammunition awaiting disposal occupies 2.5 million square feet of storage space which could be used for other purposes. The budget for demilitarization and disposal of ammunition has been consistently underfunded.

At a time when we are sending more ammunition to Europe for war reserves, many storage facilities are deteriorating and inadequate. There are also inadequate facilities in Europe for renovating and reworking defective ammunition.

The General Accounting Office issued its report on February 9, 1982. In responding to the report on April 26, Principal Deputy Assistant Secretary of Defense, James Juliana accepted most of the recommendations, and stated that corrective actions were being taken. I would like to take some time today to discuss the status of those corrective actions.

INADEQUATE STORAGE FACILITIES

GAO found that the Army's storage facilities in the U.S. and the Pacific theater were generally adequate. However, at Caerwent in South Wales, and Miesau in West Germany, large quantities of ammunition were subjected to poor storage conditions. Over 700 rounds of ammunition from one sample lot at Caerwent were declared unserviceable because of rusted base plates caused by humid storage.

Above-ground storage facilities at Miesau were built 30 years ago as temporary structures, and are now in a state of serious deterioration.

What funding has been programmed by the Army or NATO to repair or replace the storage facilities at Caerwent and Miesau?

General SKIBBIE. There are no special additional funds programmed. However, all of our ammunition storage facilities are inspected twice each year by what we call ammunition surveillance inspectors. They then report any deficiencies, any problems that were causing serviceability problems with the ammunition, and that then becomes a part of the normal budget request for resources to upgrade those facilities.

As you know, Mr. Robinson, the Army does have what we call BMAR, a Backlog of Maintenance and Repair. We have been directed by Congress to reduce that. We are in the process of reducing that.

In 1985 we get down to what has been designated as the containment level. As we do that, we will be able to use some of those Backlog of Maintenance and Repair funds to improve these storage conditions.

If you would like, I have some pictures of Caerwent to show you those specific storage conditions you are talking about and what is described on paper does not look quite so bad in real life.

Mr. ROBINSON. We happen to have some pictures here ourselves.

General SKIBBIE. You are one up on me, sir.

Mr. CHAPPELL. Would you like him to show them?

General SKIBBIE. There are three slides here that I think might be of interest.

I went to Caerwent. That, by the way, is an old Naval Ordnance factory. I guess with the lighting in here, you can't really see that too well.

[Slide.]

They used to produce powder for the Royal Navy here, various production plants, the storage facilities. The Army has obtained that facility to store ammunition.

[Slide.]

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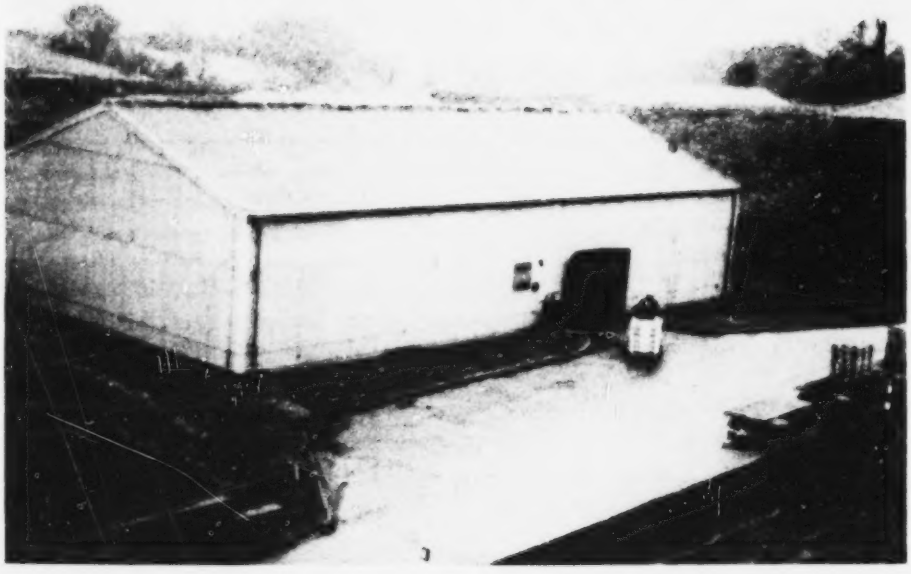

That is one of the better facilities there.

You can't see it, but it isn't humidity-controlled. It is a very adequate storage facility.

[Slide.]

This is the type of facility that I think the GAO is concerned with because these were built without doors and without windows.

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Yet it does provide reasonably adequate protection from the elements.

Again, it is obviously not humidity-controlled, no more humidity-controlled than the metal maintenance shed there.

That is the type of thing that we would then use BMAR funds to attempt to correct as those funds become available.

Mr. CHAPPELL. Will you get much improvement just by putting doors on that facility?

General SKIBBIE. I think it is a question of how much rain you get in there. The humidity isn't going to change whether you put the doors on or not.

Certainly putting something across there would help, very definitely.

I have a couple more slides.

[Slide.]

Here is the type of deterioration they found. You have some rust up there, some rust down here. That is relatively minor maintenance. It amounts to sandblasting or scrubbing it down with a wire brush and then repainting.

[Slide.]

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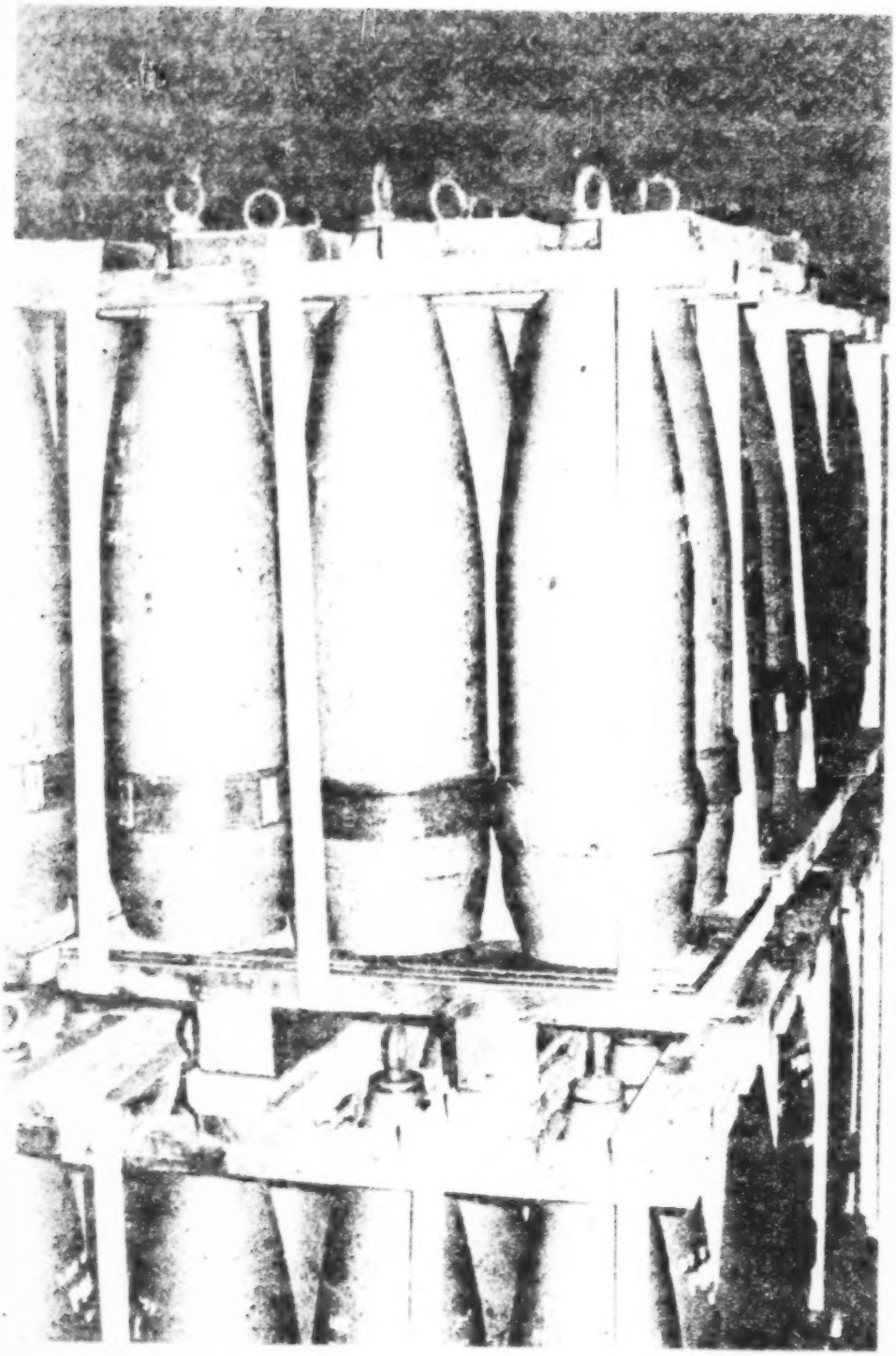

Here again you have some minor pitting, but this occurs in bunkers too that are——

Mr. CHAPPELL. Does that render that ammunition unsafe?

General SKIBBIE. No, sir. We would classify it as shootable but in need of maintenance.

We would take it out, sand those down, repaint them and return them to stock.

[Slide.]

Finally, these are not rusted, except where the lifting plugs are rusted. Again we would classify those as shootable but in need of maintenance. We would take the lifting plugs off, go ahead and probably send them through a shot blast furnace and then paint them.

Mr. ROBINSON. We are advised that you can only take that operation so far and that there was one lot of 700 8-inch projectiles that have rusted through and cannot be repaired and the presumption is that perhaps they had been reworked more than once and you eventually cannot do that any longer because the plate wears out.

These 700 rounds are declared unserviceable because of rusted base plates caused by storage.

General SKIBBIE. We would declare them unserviceable. We got into this discussion last year. That was why I was trying to use shootable versus unshootable. Something can be classified unserviceable and yet be shootable because it only requires minor maintanance. Those that have the rusted base plates might be considered unshootable but capable of being maintained.

I am not familiar with the specific 700. If the base plates are rusted completely through, then they would certainly have to have the base plates replaced.

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If the base plates simply have exterior rust on them, they could be derusted and repainted.

Mr. ROBINSON. These were declared unserviceable for any use, and we are told that surveillance experts say that they should not rust for a minimum of ten years when they are stored properly.

General SKIBBIE. We just have to run an audit on those 700 to determine specifically what the track record was.

AIR FORCE STORAGE FACILITIES IN EUROPE

Mr. ROBINSON. It is an item mentioned in the GAO report.

GAO also found that the Air Force in Europe does not have sufficient covered storage space, and must store some ammunition on open concrete pads, on pads with roofs over them, and in shelters open in the front.

What has been budgeted by the Air Force to correct this problem?

General BOWDEN. Sir, in response to that, and also recognizing where we need to go in that theater, we have programmed about $50 million over the five-year period to construct 100 storage facilities in that theater. So we are trying to correct that problem.

In addition, there's a lot of work being done on improved preservation material to stop the conditions that you are talking about, and since we can't get those facilities built right away, these kinds of interim measures need to be taken to try to do a better maintenance job.

So we are trying to correct the problem, sir.

Mr. ROBINSON. How is it presumed this $50 million is going to be budgeted as to the years involved? Is it again one of those things that you spend a little bit in the first few years and most of it is budgeted or proposed to be budgeted in the last two or three?

General BOWDEN. Specifically, sir, we have about $11 million to $12 million for each of those years, and we start the first period in fiscal year 1985.

Mr. ROBINSON. So you do not begin the program until 1985?

General BOWDEN. No, sir. I can also provide just a little more rationale for that kind of schedule.

We are trying to tie the production delivery of our new munitions with the military construction for storage capacity increases to store those munitions.

Mr. ROBINSON. Mr. Chairman, I am going to ask unanimous consent that the balance of the questions on care and maintenance of ammunition go in the records under my name.

Mr. CHAPPELL. Without objection.

[CLERK'S NOTE.—Questions submitted by Mr. Robinson and the answers thereto follow:]

INSUFFICIENT ARMY STORAGE FACILITIES IN EUROPE

QUESTION. Total storage capacity in Europe is insufficient to meet the Army's requirements for prepositioned war reserves after fiscal year 1984. The Army is able to store only about ——— days of supply as opposed to a ——— day requirement. General Meyer told us earlier this year that NATO will probably not fully fund construction for ammunition storage. To get around this problem,

the Army proposes to "more intensively manage its retrograde program."

What does this mean?

General SKIBBIE. The Army has begun to modernize both weapon systems and ammunition items. As fielding of systems and ammunition occurs, retrograde of items replaced will occur. Due to limited storage space, which we expect to maximize in fiscal year 1983, the retrograde of ammunition no longer required or excess to our needs will receive close management attention.

QUESTION. With a shortage of storage facilities and continuing deliveries of ammunition, will the Army be placing more ammunition in open storage or in inadequate facilities in Europe?

General SKIBBIE. No. The Army will control the call forward of ammunition, limiting call forward to known storage availability. We are working closely with the USAREUR staff in this regard.

QUESTION. What storage facilities exist for U.S. storage of ammunition destined for Europe in the event that adequate facilities in Europe are not available when the ammunition is manufactured?

General SKIBBIE. The Army Depot Systems Command manages 12 depots with ammunition storage capabilities. The Army Armament Material Readiness Command manages three former Navy ammunition storage depots. The total capacity of these facilities for ammunition storage is ———.

QUESTION. Has the Army considered such an option?

General SKIBBIE. Yes.

QUESTION. According to GAO, the Army will have only 70 percent of needed storage capacity in Europe in fiscal year 1983 and will not reach 100 percent until 1989. Even this figure will not be attained if there are slippages or reductions in NATO funding.

Does the Army agree with the shortfall figures cited in the GAO report?

General SKIBBIE. No. The Army's total ammunition storage requirement for the end of fiscal year 1983 is ———.

QUESTION. What is the possibility that there will be slippages or delays in NATO funding?

General SKIBBIE. Slippages have occurred in NATO funding. The fiscal year 1982 infrastructure funded ammunition storage construction program was reduced by approximately 50 percent. The fiscal year 1983 program is under discussion within the NATO arena. The outcome of these discussions is unknown at this time; however, we understand ammunition storage construction could be deleted. These slippages contributed to the 1 percent short fall in storage availability for fiscal year 1983.

QUESTION. What will be done in fiscal year 1983 with the 30 percent of the ammunition which will not have adequate storage facilities?

General SKIBBIE. Any ammunition which can not be properly stored in USAREUR would be retained in CONUS, until such time as appropriate storage is available.

QUESTION. What is the procurement value of this 30 percent?

General SKIBBIE. The procurement value of the 1 percent shortfall ——— approximates $86 million.

MAINTENANCE BACKLOG

Question. GAO found problems and backlogs with the ammunition maintenance programs of all three services. For example, Army's present maintenance capabilities in Europe cannot keep up with the new generations of unserviceable ammunition expected in the future. Likewise, the Air Force has backlogs ranging from 1½ to 3 years at its European depots. The GAO report listed 6 construction projects proposed for Europe which would allow the Army to perform the required maintenance. What is the status of each of these facilities?

Answer. The Bertrix maintenance facility and the Twisteden maintenance/surveillance facility are proposed for funding in NATO Slice 36 (fiscal year 1985) for completion in fiscal year 1987. These projects are two years behind the schedule shown in the GAO report along with the associated ammunition storage facilities. Because ammunition will not be called forward to these sites until facilities are available, the construction delay will not worsen the current backlog situation.

Funding of the Koeppern maintenance facility is included in the fiscal year 1984 MCA budget request for completion in fiscal year 1985. The project is on schedule.

The Vielbrunn maintenance/surveillance facility is included in the fiscal year 1985 MCA program for completion in fiscal year 1987. The project is on schedule.

The Kriegsfeld maintenance facility is included in the fiscal year 1984 MCA budget request for completion in fiscal year 1986, two years sooner than indicated in the report.

The Muenster maintenance/surveillance facility is included in the fiscal year 1986 MCA program for completion in 1988. The project is on schedule.

Question. If these projects are delayed or abandoned, the backlog will go from 67,000 tons in 1981 to an estimated 84,000 tons in 1987. Do you foresee any delays at this time?

Answer. We foresee no delays, other than that described above, at this time. One project is ahead of schedule.

Question. What will be done if delays do occur?

General SKIBBIE. We will fund the full maintenance requirement in Europe. There is sufficient capability to renovate more than is currently being declared unserviceable.

Question. Air Force headquarters informed GAO that new maintenance and renovation facilities have been programmed for Welford, Camp Darby and Wenigerath in Europe. Where do these facilities appear in the current budget?

Answer. $1.8 million is in this year's—fiscal year 1983—Budget Request for military construction. The remaining $3.3 milion is programmed for the fiscal year 1984 budget request. The fiscal year 1983 projects are for a missile maintenance facility at Camp Darby and a munitions maintenance facility at Wenigerath. The fiscal year 1984 projects are for a munitions maintenance facility at Camp Darby and a bomb renovation plant at Wenigerath.

Question. The Army has pledged to reduce its renovation backlog to about 33,000 by the end of fiscal year 1985.

Is this program fully funded, in OMA and procurement in fiscal year 1982, in fiscal year 1983, and in the fiscal year 1984 POM?

General SKIBBIE. While the Army has stated in the past that it expects to reach the 33,000 short ton level by the end of fiscal year 1985, this program, along with all other Army programs, is re-evaluated each year in terms of priority and Army resource constraints. The Army is committed to resource this program at a level appropriate to its priority and the Army's available resources. In this light, the program was fully funded in fiscal year 1982 and fiscal year 1983. Funding decisions for fiscal year 1984 and the future years are not final at this time.

Question. The fiscal year 1983 consolidated guidance from OSD requires that the services eliminate their renovation backlog by the end of fiscal year 1984.

Is the Army funded to achieve this objective?

General SKIBBIE. Yes. The Army is funded to achieve the objective and will achieve this objective by 31 Dec 1982.

Question. Is the Navy?

Answer. The Navy commencing in fiscal year 1981 increased the level of funding for renovation and maintenance of ammunition to reduce the backlog which supports the active operating force by the end of fiscal year 1984 to the ammunition that is in the maintenance pipeline. While the percentage of ammunition in the maintenance pipeline varies for each particular type of ordnance item, the aggregate has been approximately 15 percent. This figure will be reduced to approximately 10 percent by the end of fiscal year 1984 if present funding remains intact. This 10 percent in the maintenance pipeline will permit effective utilization of ordnance maintenance facilities required by the Navy.

Question. Is the Marine Corps?

Answer. The Marine Corps' programmed ammunition maintenance requirement is as follows:

	Fiscal year—				
	1983	1984	1985	1986	1987
Dollars (thousands)	$9,951	$13,930	$15,294	$15,946	$16,270
Short tons	4,822	5,398	4,646	8,524	5,325

The program cited above, which permits repair of those assets currently known to be discrepant and items which are projected to require repair predicated on historical failure rates, will fully fund the maintenance program to support the inventory at the acquisition objective level. Funding projections for the Marine Corps' ammunition maintenance program have increased from a pre-fiscal year 1981 annual amount of less than $6 million to the levels cited above as a direct result of a concentrated effort to reduce backlogs and, most significantly, to accommodate the costs of repairing items recently identified/projected to require repair.

Question. Is the Air Force?

Answer. Yes. The Air Force is funded to eliminate renovation backlog by fiscal year 1984 and has programmed operation and

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maintenance funding in the outyears to support anticipated routine maintenance actions.

ACCOUNTING FOR NAVY AMMUNITION

Question. According to the GAO, the Navy's accounting and control over conventional ammunition is in such a state of disarray that it is virtually impossible to establish what the maintenance and renovation backlog is, let alone what it will cost to eliminate. What are the Navy's time schedules and milestones for implementing each of the following GAO recommendations of last July: Develop a program to expedite the reconciliation of the Navy's central inventory records with storage, records and investigate the causes of significant adjustment.

Answer. The Chief of Naval Operations has directed a wall to wall inventory of conventional ammunition be made to all Navy storage activities with a completion by the end of 1984. The results of this inventory are being reconciled with both local station records and the central Navy record reflected in the Conventional Ammunition Integrated Management System (CAIMS). Significant adjustments will be investigated in accordance with the directives of higher authority. The milestones for this inventory for major CONUS and Pacific Ocean areas by activity are being formulated. The milestones for Atlantic and Mediterranean area activities, Bermuda, Lajes, Rodman, Mechrihanish, Roosevelt Roads, Jacksonville, Cherry Point, Norfolk, Santo Stefano and Souda Bay have been completed. August Bay will be completed in August 82; Sigonella, October 82; Rota, March 83; Glen Douglas, May 83; Broughton Moor, July 83; Cartegena, September 83; and Lisbon, November 83.

Question. Develop a capability to effectively monitor the status of ammunition transactions.

Answer. Navy has implemented a program to more effectively monitor the status of ammunition transactions. The six point program includes:

(1) Our Transaction Item Reporting (TIR) task teams have been expanded. The TIR teams audit, review and monitor ammunition receipt and issue transactions to ensure accuracy and timeliness of reporting. As a result of this effort, we have isolated those activities and areas where we are experiencing the greatest number of errors, as a basis for corrective action.

(2) Critical error statistics from CAIMS (Conventional Ammunition Integrated Management System) are now published by reporting activity. The Fleet Commanders use these reports to analyze reporting error trends and effect corrective action.

(3) We have further standardized our shipping documents to minimize the potential for errors.

(4) We have implemented a new CAIMS program to capture in-transit asset visibility.

(5) We are implementing optical scan of ammunition items which will improve the inventory data base. This program will be fully implemented in major Navy CONUS activities by the end of fiscal year 1984 and worldwide thereafter.

(6) Implementation of National Stock Number/Condition Code Reporting Worldwide. This is scheduled for completion in July 1983.

Question. Process suspended ammunition in a more timely manner?

Answer. The Navy projects that the backlog of suspended (unserviceable) ammunition will be reduced to that which is in the maintenance pipeline by the end of fiscal year 1984. At that point the Navy should be able to shift renovation and rework priorities to working ammunition which is in need of normal, scheduled maintenance or accomplish repairs to ammunition accidently damaged.

Question. Require interim accountability for ammunition designated for further transfer.

Answer. Navy has implemented a new CAIMS program which captures intransit visibility of all Navy ammunition, thus eliminating previous loss of visibility of that ammunition in the old For Further Transfer category.

LACK OF NAVY ORDNANCE SPECIALISTS

Question. One of the problems cited by GAO is the absence in the Navy of career specialists in ordnance and ammunition management. What is the Navy doing to establish a career specialty for ordnance and ammunition management?

Answer. The Navy has always had career personnel involved in the management aspects of ordnance and ammunition (A "Triad" of Naval Officers (Commissioned and warrant), enlisted personnel, and Navy Department civilians.) The specific skills, population, and employment of each of the elements of the "triad" are closely monitored to ensure that the make-up of the ordnance community reflects the most critical needs of the Navy. New career fields are created and old ones disestablished as required. In 1978 the Secretary of the Navy responded to a perceived need, which GAO also noted, by authorizing the establishment of a new officer career field which combines the functions of expendable ordnance management, explosive ordnance disposal, and diving and salvage. This specialty field was established to arrest the decline in the officer ranks of expertise related to the design, procurement, maintenance, storage, transportation, and disposal of naval ordnance. The program is gaining in recognition, and junior officers are progressing through the early training programs successfully.

Question. When will this career field be fully manned?

Answer. It is anticipated that this career field will be fully staffed by 1987. At that time these officers, supplemented by specific military technical specialists, will occupy a majority of positions involved with ordnance management. In regard to enlisted personnel, changes in the method and type of assignment have been accomplished to the effect that designated billets now require the assignment of specific ratings and certain assignments such as Subic Bay are now classified as shore duty. The Navy has also staffed certain overseas billets in fleet activities with civilian personnel in order to enhance continuity of expertise and experience.

Question. What additional attention to the many problems in Navy ammunition management is being given by top-level people within the Navy, and what impact has it had?

Answer. Navy senior grade officials continue to direct, coordinate and monitor various actions and initiatives to improve ammunition management in the Navy. This management effort has resulted in various initiatives, including but not limited to the following:

a. A wall to wall inventory worldwide of Navy ammunition.

b. Enhanced Conventional Ammunition Integrated Management Systems (CAIMS) programs to correct perceived management deficiencies. For example, Complete In Transit Visibility Program.

c. Enhanced Navy weapon station ammunition management at the local level. For example, Expanded Transaction Item Reporting Team support.

d. Initiatives to reduce unserviceable generations and expeditiously upgrade unserviceable to serviceable category assets. For example, Retrograding of unserviceable EXCONUS by premium transportation and presentencing ammunition before receipt at a weapons station.

e. Fully funded Maintenance Support.

f. Enhanced Navy—SMCA lines of communication and mutual support through establishment of EDCA and Single Navy Point of Contact channel.

[CLERK'S NOTE.—End of questions submitted by Mr. Robinson.]

SINGLE MANAGER FOR CONVENTIONAL AMMUNITION

Mr. CHAPPELL. A moment ago we started talking about the single manager for conventional ammunition.

In fiscal year 1979 the General Accounting Office issued a report identifying several improvements needed to strengthen the single manager program. I would like to question you on some of these to determine which have been adopted in the revised directive and to find out why those not adopted were not.

ORGANIZATION OF SINGLE MANAGER'S OFFICE

Does the new directive place the single manager organization directly under the Secretary of the Army and provide a small multiservice liaison staff in the Washington area?

Dr. WEBSTER. Basically that is correct. The directive gives the Secretary of the Army the authority to redelegate within his service. The prime responsibility rests with him. Also the directive does call for a multiservice liaison staff in the Washington area.

Mr. CHAPPELL. Does the new directive assign all conventional ammunition items to the single manager?

Dr. WEBSTER. It does not assign all conventional ammunition. There were some exceptions made in that particular revision which had to do with some service-peculiar items and some low-activity, high-technology-type items.

That is a subject that we will be looking at in our evaluation, as I discussed earlier, that we are going to start in November of this year.

Mr. CHAPPELL. Let me come back to the question I just asked. I think you got part of the answer.

Does the single manager organization fall directly under the Secretary of the Army?

Dr. WEBSTER. General Hardin reports to the Secretary of the Army and reports to General Keith.

General BURBULES. But the Director does have direct access to the Secretary of the Army as well as the headquarters of the other services, sir.

Mr. CHAPPELL. By directive, the single manager for conventional ammunition is the Secretary of the Army.

The Executive Director for conventional ammunition is a new position which Lt. General Hardin currently occupies.

What other responsibilities does Lt. General Hardin have?

To whom does he report?

General BURBULES. Again he reports to General Keith, sir, in that capacity. General Keith is the Commanding General of DARCOM.

Mr. CHAPPELL. That doesn't put him directly under the Secretary of the Army?

General BURBULES. No, but by the charter signed by the Secretary of the Army, approved by all of the services and approved by the Secretary of Defense, he has direct access to the Secretary of the Army if he chooses to exercise that channel.

Mr. CHAPPELL. What is Brigadier General Burbules' position?

General BURBULES. I am the Deputy Executive Director for Conventional Ammunition.

Mr. CHAPPELL. Who do you report to?

General BURBULES. General Hardin, sir.

PERSONNEL IN THE SINGLE MANAGER'S OFFICE

Mr. CHAPPELL. How many people work in the Single Manager's office at the ammunition readiness command at Rock Island?

General BURBULES. When you say Single Manager of Conventional Ammunition, you are talking about elements throughout the United States Army.

The single manager organization includes the secretariat of the Army, staff elements such as the Deputy Chief of Staff for Research, Development and Acquisition, the Comptroller of the Army, elements in DARCOM headquarters, Armament and Materiel Readiness Command, the Depot System Command, and the Ammunition Research and Development Command. All of these perform functions for the single manager.

The Office of the Executive Director for Conventional Ammunition is that element set up in the Washington, D.C., area consisting of a small, highly skilled staff of 25 people to integrate the efforts of all the single manager organizations as well as the operating efforts of the services and achieve the objectives outlined in Department of Defense Directive 5160.65 and the single manager charter I told you about that was approved by the Deputy Secretary of Defense.

Mr. CHAPPELL. Where is most of the day-to-day work done?

General BURBULES. The day-to-day work is done throughout the Army, sir, in doing the single manager missions.

The functions of the Office of the Executive Director for Conventional Ammunition are done in the Washington, D.C., area where we have ready access to all the headquarters.

Mr. CHAPPELL. Where are most of the people that do all the coordinating work? Are they here in Washington?

General BURBULES. Yes, sir, at the higher levels. However, ARRCOM at Rock Island, Illinois, the principal field operating agency of the single manager, also has direct ties into the other services, and they coordinate at the operating level on a day-to-day basis as well.

There are some 4,000 people in that headquarters. I would estimate that about 300 of those are in, you might say, the conventional ammunition area. They work with the various services on a day-to-day basis in the procurement, production, quality assurance, inspection, maintenance, and demilitarization of single manager types of conventional ammunition.

Mr. CHAPPELL. Who do the people at Rock Island report to?

General BURBULES. Major General Register, the Commanding General of ARRCOM.

Mr. CHAPPELL. Do they report to anybody else?

General BURBULES. No, sir. He is their boss.

General SKIBBIE. I might add he reports to General Hardin, who is the Executive Director for Conventional Ammunition.

So it all centralizes right with General Hardin. He has control of all the elements necessary for the efficient operation of the single manager mission.

Mr. CHAPPELL. Why don't you provide for the record for us where these people are that we are talking about and how many of them are in each place.

Give us an idea of that.

General BURBULES. Yes, sir.

[The information follows:]

The current man-years of effort by the Army in performance of the SMCA assignment is approximately 8400. The Army commands and staff agencies involved with the SMCA assignment and their approximate number of man-years of associated effort are summarized as follows:

SMCA Contribution in Man-years of Effort

Staff Agency or Command:	
Army Secretariat & HQ DA Staff	10
Executive Director for Conventional Ammunition (EDCA)	25
HQ DARCOM	37
HQ ARRCOM and its Field Activities	[1] 5,475
HQ DESCOM and its Field Activities	[1] 2,468
Other	427
Total SMCA Man-years of Effort	8,442

[1] Includes an appropriate share of personnel performing support functions, e.g., base operations functions.

RESPONSIBILITY OF SINGLE MANAGER

Mr. CHAPPELL. Does the new directive make the single manager responsible for procuring and/or producing all conventional ammunition items which have passed from R&D into production regardless of production quantity?

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Dr. WEBSTER. No, not all items. There are some exceptions. For example, an initial low rate production item is often highly concurrent—particularly in today's acquisition programs—with full scale development and is therefore excepted from single manager responsibility. However, for the majority of ammo, once it is approved for full scale production, the single manager then assumes responsibility.

Mr. CHAPPELL. Does the new directive authorize the single manager to review and approve the services' five-year defense programs to achieve procurement economies and optimum use of the ammunition production base?

Dr. WEBSTER. He reviews and coordinates them. He does not have specific approval authority. We talked a little bit about that earlier.

Final approval would rest with the Secretary of Defense, and my office will advise him—based on this consolidated review—as to whether or not we are in compliance with the defense guidance.

Mr. CHAPPELL. Does the new directive make the single manager responsible for establishing, modifying, maintaining, modernizing, and disposing of all conventional ammunition production capacity, including initial production facilities?

Dr. WEBSTER. Basically I would say yes with the exception of initial production facilities.

Mr. CHAPPELL. Does the new directive require the single manager to review and approve all funding requests for enhancing ammunition production facilities retained by the services?

Dr. WEBSTER. The single manager reviews requests for enhancing the production facilities. Only a few facilities are retained by the services, and the services retain approval authority for enhancing those facilities. In particular there are two Navy facilities located at Indianhead and Yorktown.

Mr. CHAPPELL. How does that differ from the old directive?

Dr. WEBSTER. Let me check since I have only been there for a year.

Mr. OXLEY. The single manager participates with the services as far as any new requirements are concerned since the single manager has access to the bulk of the facilities and equipment capabilities. Therefore, the services submit their requirements through the single manager, who provides input on whether or not existing facilities or capabilities are available.

Mr. CHAPPELL. Wasn't that true before, though?

Mr. OXLEY. I don't believe so. It was not stated in the directive then as it is now.

Now on an occasional basis the single manager and the services may have informally coordinated their actions.

However, it is now a working relationship that is required.

Mr. CHAPPELL. Any other differences?

Mr. OXLEY. Again, the single manager doesn't have the approval over facility enhancements, but they do have review responsibilities.

The Army can correct me if I am wrong, but there have not been any unresolved enhancement issues under the new directive.

Mr. CHAPPELL. Does the new directive designate the single manager as owner of the ammunition in the wholesale inventory?

Dr. WEBSTER. It does not, but this is one area we will address in the follow-up evaluation program that we will start this fall.

We will be looking specifically at that issue.

Mr. CHAPPELL. What items will he review in the fall?

Dr. WEBSTER. We have put together a draft plan of items to review which were extracted from GAO reports almost on an item-per-item basis.

Mr. CHAPPELL. Just put it in the record.

[The information follows:]

Except for the Services retaining essential responsibilities for determining and defending requirements, controlling item configuration, requisitioning ammunition to meet user needs, and maintaining that ammunition at retail levels, all other functions will be considered for transfer to the single manager with the ultimate decision resting on how best to support our combat forces.

Dr. WEBSTER. For example, we are going to concentrate on the item management aspect. The question you have just asked—Does he have ownership of all the items in the wholesale inventory.

Are there any other items that should be brought into the conventional ammunition category? To what degree would the single manager be able to get involved in the retail inventory? Are there some areas where he could get involved at the moment? Most of these are accepted areas for further improvements. Of course, improvements in the information systems will also be addressed.

Mr. CHAPPELL. Does the new directive assign production base modernization and expansion to the single manager, after the single manager's organization is strengthened?

Dr. WEBSTER. Yes, it does.

ECONOMIES AND EFFICIENCIES FROM SMCA OFFICE

Mr. CHAPPELL. Can you name any specific improvements or economies and efficiencies which have resulted from the new directive that would not have been possible under the old directive?

Dr. WEBSTER. We talked earlier about the fact that we prepared an integrated procurement plan this year that we feel provides a potential savings of about $33 million if there is no adverse impact on readiness. Our visibility of assets is getting better, and I think we can find more economies of this type as our visibility system is implemented.

Mr. CHAPPELL. Last November, Assistant Secretary Korb testified to the House Government Operations committee that "I am convinced that a strong, efficient single manager is in the best long term interests of the DOD."

He also stated that the new directive "will not result in a full-fledged single manager.

When can we expect to see a full-fledged single manager?

Dr. WEBSTER. We don't have an established date at this time. I will go back to our management plan. We will start that in November.

We have this draft improvement plan coming. We will be working with members of your staff. We will make further progress in the next year in examining all aspects of this problem.

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FURTHER CHANGES TO SMCA DIRECTIVE

Mr. CHAPPELL. Last year Assistant Secretary Korb wrote the committee that "Progress under this directive will be monitored closely over the next year, and we will take necessary action to further strengthen and enhance the single manager's missions whenever and wherever it seems advisable to do so."

What specific actions have been taken since last November to further strengthen and enhance the single manager program?

Dr. WEBSTER. We have done several things.

First, when we wrote the directive, the revised directive, we put in some flexibility so that we could strengthen and enhance the single manager where it seemed advisable to do so.

Some of the areas where we think that we have accomplished this strengthening are: We have developed the implementing manaual of the directive, which is being reviewed by OSD. The charter of the executive director for conventional ammunition has been completed. Funding was programmed to reduce the maintenance backlogs.

We are doing a better job of developing criteria to properly identify the condition of items requiring repair. We have a depot improvement program to improve the accountability of ammunition, and we have developed the integrated procurement plan.

We also have provided the single manager visibility of common retail assets held by the services, and we have established the working capital fund.

Several of these things were mentioned earlier in our written statement. We are developing an ammunition catalogue, and I think just the development of the executive director's organization in the Washington area as the focal point for the single manager is a significant improvement.

I will repeat this: We will complete our draft plan very shortly, and that will be our game plan for the next year of operation—to take that draft plan and look for areas of improving the single manager.

Mr. CHAPPELL. Do you have any specific additional actions that you anticipate in the next six months or is that what you are talking about now?

Dr. WEBSTER. That is basically it. We will evaluate what we have done this year. You are getting some of that evaluation now relative to the progress we have noted. Then we will implement our second year plan.

Mr. CHAPPELL. Last March the House Government Operations Committee recommended that the Secretary of Defense consider establishing a central agency for conventional ammunition within DOD.

What consideration has been given to such a proposal?

Dr. WEBSTER. At the moment we are looking toward the improvement of the single manager approach. We have said, and I think the Secretary has written back to the Government Operations Committee, that if this plan fails—and I don't think it will—we will pursue the feasibility of establishing a separate agency.

SMCA DIRECTIVE

Mr. CHAPPELL. Place a copy of the revised Directive 5160.65 in the record at this point.

Dr. WEBSTER. Yes.

[The document follows:]

November 17, 1981
NUMBER 5160.65

ASD(MRA&L)

Department of Defense Directive

SUBJECT: Single Manager for Conventional Ammunition

References: (a) DoD Directive 5160.65, "Single Manager Assignment for Conventional Ammunition," November 26, 1975 (hereby canceled)
(b) through (o), see enclosure 1

A. REISSUANCE AND PURPOSE

This Directive reissues reference (a) and cancels references (b) through (f) to update the functions, responsibilities, authorities, and relationships of the Single Manager for Conventional Ammunition (SMCA).

B. APPLICABILITY

The provisions of this Directive apply to the Office of the Secretary of Defense (OSD), the Military Departments, the Organization of the Joint Chiefs of Staff, the Unified and Specified Commands, and the Defense Agencies (hereafter referred to as "DoD Components"). The term "Military Services," as used herein, refers to the Army, Navy, Air Force, and Marine Corps.

C. DEFINITIONS AND BIBLIOGRAPHY

The terms used herein and other key documents relevant to this Directive are contained in enclosures 2 and 3.

D. POLICY

1. Under the authority of the Secretary of Defense, the Secretary of the Army is assigned the SMCA mission within the Department of Defense with the power to redelegate, within the Army, those authorities for the performance of the functions outlined herein.

2. The objectives of this assignment are to:

a. Achieve the highest possible degree of efficiency and effectiveness in the DoD operations required to acquire top quality conventional ammunition for U.S. forces during peacetime and mobilization.

b. Integrate the conventional ammunition logistic functions of the Military Departments to the maximum extent practicable, thereby eliminating unwarranted overlap and duplication and increasing the efficiency and effectiveness of the overall conventional ammunition logistics system.

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c. Maintain an integrated production and logistic base to meet peacetime, surge, and mobilization requirements for assigned ammunition.

3. The SMCA (or the Department of the Army) shall develop and maintain the Charter for a Conventional Ammunition Working Capital Fund (CAWCF), which shall be approved by the Assistant Secretary of Defense (Comptroller) (ASD(C)), under 10 U.S.C. 2208 (reference (g)), for managing, controlling, financing, accounting, and reporting for the procurement of ammunition components and end items. Standard prices and pricing procedures will be established in accordance with the CAWCF or otherwise authorized by DoD regulations.

4. DoD Components shall coordinate, collaborate, and support the SMCA session with respect to ammunition functions, responsibilities, and authorities retained by them, and as specified in this Directive, including the periodic exchange of data and information on the quantity, location, and condition of SMCA-assigned ammunition stocks.

5. OSD shall provide for separate identification in the Army budget for the SMCA production base and operations and maintenance requirements.

E. RESPONSIBILITIES AND FUNCTIONS

1. The Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics (ASD(MRA&L)) shall:

a. Have principal OSD staff responsibility for SMCA activities.

b. Provide logistic policy and guidance for this assignment and direct the appraisal of logistics operations under this Directive.

c. Appraise, in collaboration with other DoD Components, overall performance of the SMCA in accomplishing the objectives set forth in subsection D.2., above.

2. The Under Secretary of Defense for Research and Engineering (USDR&E) shall provide acquisition policy and guidance for this assignment and coordinate the appraisal of acquisition operations under this Directive.

3. The Assistant Secretary of Defense (Comptroller) shall provide financial management policy and guidance for this assignment and shall approve the CAWCF operating budgets.

4. The Chairman, Joint Chiefs of Staff, shall retain the authority to make combat allocations of conventional ammunition to Unified and Specified Commands, and shall establish procedures for allocation of critical Service-owned assets to the Military Services.

5. The Secretary of the Army shall:

a. Issue a charter, in coordination with the other Military Departments, to be approved by the Secretary of Defense, establishing the manner in which the responsibilities and authorities assigned to the SMCA for accomplishment of the assigned mission shall be executed.

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b. Approve, in coordination with the other Military Department Secretaries, a Table of Distribution and Allowances (TDA), for the SMCA activity to include a dedicated SMCA management organization to be located in the National Capital Region with Joint Service staffing and support for centralized control of SMCA operations.

c. Identify military and civilian positions suitable for career development of personnel of all the Military Services.

d. Assign military and civilian personnel to the SMCA organization and assure that these individuals are given credit and recognition for Joint Service.

6. The Single Manager for Conventional Ammunition shall perform the following responsibilities in the categories listed below.

a. Research, Development, Test, and Evaluation (RDT&E). Provide fabrication of developmental ammunition in support of RDT&E and low-rate initial production, upon request of the Military Services, with agreed-upon schedules and with resources provided by the Military Services.

b. Production Base

(1) Acquire the total ammunition production base, in accordance with the Defense Acquisition Regulation (reference (h)) and the Secretary of Defense Policy on Conventional Ammunition Acquisition and Production Capacity (reference (i)), subject to applicable laws, to include the Arsenal Act, 10 U.S.C. 4532 (reference (j)) to:

(a) Ensure that there is an adequate production base to meet peacetime, surge, and mobilization requirements.

(b) Encourage participation and investment by the private sector to minimize the need for government-financed facilities.

(c) Ensure a balance in ammunition component and end item production capacities for surge and mobilization purposes.

(2) Manage, operate, and maintain DoD installations and facilities involved in, capable of, and required for manufacturing assigned ammunition. For production facilities retained by the Military Services, the SMCA shall seek the best balance between Service objectives for facilities that the Services will continue to manage and operate, and SMCA objectives for management of the ammunition production base. SMCA responsibilities include:

(a) Review of the establishment of all DoD commercial or industrial-type activities.

(b) Use, maintenance, expansion, modernization, replacement, and disposal of industrial resources.

(c) Employment of industrial funds at government-owned, government-operated facilities.

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(d) Acquisition, management, and disposal of real property, including utilization and retention of such property, and obtaining prior approval of real property actions.

(e) Maintenance of real property.

(f) Management of defense-owned industrial plant equipment.

(g) Military construction.

(h) Conduct of industrial preparedness planning; defense production management; diminishing manufacturing sources and material shortages management; and defense industrial plan reserve management.

(3) Manage defense-owned industrial plant equipment required to manufacture assigned ammunition.

(4) Conduct a manufacturing technology program for assigned ammunition.

c. Acquisition

(1) Acquire conventional ammunition, upon receipt of funded programs, in accordance with the Defense Acquisition Regulation (reference (h)) and the Secretary of Defense Policy on Conventional Ammunition Acquisition and Production Capacity (reference (i)), subject to applicable laws to include the Arsenal Act, 10 U.S.C. 4532 (reference (j)), to ensure efficient and economical procurement after decisions on procurements required for an adequate production base for surge and mobilization purposes.

(2) Prepare advance acquisition plans for assigned ammunition, with the assistance of the Military Services.

(3) Provide contract administration services, either separately or by arrangements with the Director, Defense Logistics Agency (DLA), during the acquisition of assigned ammunition.

(4) Provide advice to the Military Services for consideration in the preparation and approval of 5-year acquisition programs.

(5) Establish an industrial advisory committee of ammunition producers.

d. Supply

(1) Provide inventory management for assigned conventional ammunition, to include:

(a) Responsibility for custodial accountability for assigned ammunition. SMCA is relieved of custodial accountability upon receipt by Military Service-accountable officers at the first retail point.

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(b) Responsibility for property management, including responsibility for damage, loss, or destruction of assigned ammunition. SMCA is relieved of property management responsibilities upon receipt by Service-accountable officers at the first retail point.

(c) Reporting, as required by the Military Services, the status of assigned Service-owned assets by quantity, facility location, lot number, and readiness condition.

(2) Operate assigned SMCA installations and facilities and provide direction in inventory management, including the receipt, storage, maintenance, and issue of wholesale conventional ammunition, to operating installations and facilities that perform supply functions in support of the SMCA mission.

(3) Aggregate requirements and initiate procurement, renovation, and demilitarization direction.

(4) Develop and implement a wholesale distribution system to meet projected and contingency needs of the Military Services, based on their asset stratification plans provided to the SMCA.

(5) Perform physical inventories and maintain accurate stock records.

(6) Issue from the wholesale system, based on line item demand documentation transmitted by the Military Services, in accordance with the movement and issue priority system.

e. Maintenance/Renovation/Demilitarization/Disposal

(1) Manage and operate a wholesale maintenance point.

(2) Operate assigned SMCA installations and facilities and provide direction to other operating installations and facilities that perform maintenance in support of the SMCA mission.

(3) Maintain and renovate wholesale assets.

(4) Plan, program, budget, and fund for wholesale minor maintenance on a common service basis.

(5) Perform wholesale major maintenance (renovation and modification) on a cross-service basis, based on technical data and requirements provided by the Military Services.

(6) Demilitarize and dispose of all materiel at installations and facilities under the direction of the SMCA, on a common service basis supported by demilitarization and disposal technology provided by the Military Services, in accordance with paragraph E.7.d., and support provided by the DLA.

(7) Acquire equipment and facilities required for maintenance, renovation, and conversion of assigned materiel and demilitarization and disposal of all materiel at wholesale locations on a common service basis.

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f. Quality Assurance

(1) Manage the quality assurance program established by the Military Services for assigned ammunition during procurement and production, including first article testing and approval.

(2) Manage a quality assurance program during storage, maintenance, renovation, and demilitarization and disposal of wholesale assets, consistent with the programs of the Military Services. Where deviations are deemed necessary, the SMCA shall negotiate with the individual Military Service for resolution.

g. Configuration Management and Control

(1) Establish and maintain configuration controls for assigned ammunition that complement the Military Services' configuration management life cycle system.

(2) Participate in configuration control of assigned ammunition to assure full consideration of actions on SMCA logistic schedules and cost, and production base impacts.

h. Transportation for Handling. Manage transportation and handling of assigned ammunition during procurement and production to the point of receipt by Continental United States (CONUS) retail customers and overseas customers at CONUS ports of embarkation, in coordination with other single managers for transportation.

i. Safety

(1) Serve as technical advisor to the DoD Explosives Safety Board on matters related to assigned ammunition.

(2) Assure that safety standards are adhered to in the conduct of the SMCA mission.

j. Security

(1) Provide physical security of sensitive conventional ammunition and explosives.

(2) Provide physical security and protection of industrial facilities managed.

k. Logistics Data Systems

(1) Act as Executive Agent, supported by functional requirements from other DoD Components, to develop, design, and centrally maintain a standard DoD-wide automated data system covering the logistic functions in this assignment, in accordance with the policies and provisions of DoD Directive 5000.27 (reference (k)), DoD Directive 5000.11 (reference (l)), and DoD Directive 5000.19 (reference (m)). Existing data elements from DoD 5000.12-M (reference (n)) will be used in this system.

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(2) Use the military standard logistic data systems prescribed.

l. Planning, Programing, and Budgeting

(1) Plan, program, and budget resources (manpower and funds) required for assigned responsibilities and functions. Also, plan, program, and budget resources where the SMCA is involved in a host-tenant relationship with budget for all facilities and plant equipment for manufacture of conventional ammunition.

(2) Prepare, with assistance of the Military Services, and submit program changes in manpower and costs required by this assignment either in Program Objective Memoranda (POM) or Program Change Requests.

(3) Comment on the Military Services' 5-year ammunition procurement plans a prepare, with the assistance of the Military Services, an SMCA integrated 5-year defense ammunition procurement plan for use by the OSD staff during the POM review process.

m. Financial Management

(1) Manage, operate, and maintain a wholesale financial management system controlling acquisition, storage, and distribution, issues for consumption, and demilitarization or disposal of conventional ammunition.

(2) Exercise primary responsibility for programing and budgeting actions relative to the CAWCF and perform accounting functions related to the CAWCF. Exceptions to these programing and budgeting actions will be authorized, as needed, by ASD(C) memoranda.

n. Implementing Directives and Communications

(1) Prepare any manuals or procedures required to implement the provisions of this Directive, in coordination with the Military Services, and consistent with DoD 5025.1-M (reference (o)).

(2) Communicate, coordinate, and collaborate with DoD Components in matters pertaining to accomplishment of SMCA functions and responsibilities and in the exchange of planning, programing, and budgetary data and information in support of accomplishment of the SMCA mission.

o. Personnel and Unit Training

(1) Provide, based on inter-Service support, limited training of military personnel and units of the Military Services in ammunition logistics, upon their request and with resources provided by the Military Services.

(2) Establish and operate a Defense Ammunition Center and School to provide education and training for ammunition managers, specialists, and operating personnel required to perform conventional ammunition logistic missions, and to support related ammunition civilian career programs, in accordance with requirements of the SMCA and of the Military Services.

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7. The Secretaries of the Military Departments shall retain the responsibilities that are not delegated to the SMCA including the following:

a. RDT&E

(1) Retain responsibility for RDT&E of ammunition developed by the individual Military Service, including fabrication, testing, and evaluation of any developmental ammunition fabricated by the SMCA, and for low-rate initial production.

(2) Collaborate with the SMCA throughout the RDT&E of conventional ammunition and on assigned ammunition already in use, to:

(a) Provide the SMCA information on progress of ammunition development programs and on problems (anticipated or real) with assigned ammunition already in use.

(b) Incorporate SMCA ammunition logistic and production base requirements and plans in short- and long-range systems acquisition planning.

(c) Assure that SMCA ammunition and production base acquisition schedules and costs are included in Decision Coordinating Papers or Program Decision Memoranda.

(d) Assure participation of the SMCA in Defense Systems Acquisition Review Council (DSARC) and Military Service DSARC actions and acquisition reviews for ammunition items not designated for DSARC reviews, as relates to acquisition of assigned ammunition items and the ammunition production base.

(e) Assure that standardization objectives are met.

(f) When appropriate, provide for fabrication of developmental ammunition in support of RDT&E and low-rate initial production by the SMCA upon Military Service request, in accordance with agreed-upon schedules, and with resources provided by the Military Services.

(g) Establish planning and tracking teams to prepare transition plans and collaborate with the SMCA in the approval and implementation of transition plans.

(h) Transition assigned ammunition to the SMCA at the time of approval for production (Army: Type Classification; Navy: Approved for Service Use; Air Force: Program Management Directive and Production) and after low-rate initial production.

b. Acquisition

(1) Obtain SMCA advice in the preparation of the 5-year acquisition programs of the Military Services to optimize procurement and production order sizes, workloading, and delivery schedules with the objective of achieving efficiencies and economies.

(2) Provide peacetime, surge, and mobilization production requirements and priorities to the SMCA for assigned ammunition to assist in the planning required for establishment and maintenance of the ammunition production base.

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(3) For assigned items, provide technical data packages and funds to the SMCA to support requirements for supply, purchase, production, and first destination transportation of required ammunition.

(4) Provide approved ammunition procurement programs and funds by Military Interdepartmental Purchase Requests to the SMCA to support annual acquisition no later than 60 days after receipt from OSD. Within 30 days of program receipt by the Military Services, advise the SMCA of any funds to be deferred, and any other significant change anticipated to the annual procurement program.

c. Supply

(1) Provide peacetime and time-phased surge and mobilization requirements to the SMCA.

(2) Exercise Military Service responsibilities for requirements determination and financial accountability, and provide information of and support for service operational requirements.

(3) Provide data to the SMCA on common service conventional ammunition, to include quantity, location, and condition of worldwide assets, as a basis for advisory recommendations to achieve economies of operations by the Military Services.

d. Maintenance/Renovation/Demilitarization/Disposal

(1) Provide demilitarization and disposal technology for items of design cognizance of the individual Military Service, developed after November 1, 1977, to support SMCA demilitarization and disposal operations.

(2) Plan, program, budget, and fund for maintenance not funded by the SMCA.

(3) Provide technical and requirements data for SMCA maintenance operations.

e. Quality Assurance. Establish and maintain life cycle quality assurance programs for the ammunition developed by the Military Services.

f. Configuration Management and Control

(1) Retain overall configuration management and control for the ammunition developed by the Military Services.

(2) Establish and maintain a life cycle configuration management system that provides for participation by the SMCA.

(3) Provide tested and proven technical data packages to support SMCA requirements for procurement, production, storage, maintenance, demilitarization, and disposal of assigned ammunition in time to permit the SMCA to plan and execute the SMCA-assigned program.

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g. Transportation and Handling

(1) Develop or obtain from the SMCA transportation and handling criteria and requirements for incorporation in the RDT&E requirements for ammunition items developed by the Military Services.

(2) Provide planning information and instructions as required by the SMCA for transportation of the assets of the Military Services.

(3) Plan, program, budget, and fund for transportation of ammunition not funded by SMCA.

h. Safety. Conduct hazard analyses during the RDT&E phase and provide hazardous component safety data to the SMCA for ammunition developed by the Military Services.

i. Logistics Data Systems. Use the military standard logistic data systems in transactions for ammunition assigned to the SMCA.

j. Planning, Programing, and Budgeting. Plan, program, and budget for retained ammunition functions and for support to the SMCA as provided for in this Directive. Exchange planning, programing, and budgetary data and information with the SMCA to assist the SMCA in forecasting and planning support activities.

F. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Forward two copies of implementing documents to the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) within 180 days.

Frank C. Carlucci
Deputy Secretary of Defense

Enclosures - 3
1. References
2. Definitions
3. Bibliography

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REFERENCES, continued

(b) DoD Instruction 7730.45, "Selected Item Status Reports for Major Items of Ammunition," December 2, 1971 (hereby canceled)
(c) Deputy Secretary of Defense Memorandum for the Secretaries of the Military Departments, "Single Manager Assignment for Conventional Ammunition," November 26, 1975 (hereby canceled)
(d) Deputy Secretary of Defense Memorandum for the Secretaries of the Military Departments, "Single Manager for Conventional Ammunition," September 7, 1976 (hereby canceled)
(e) Acting Deputy Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) Memorandum to the Assistant Service Secretaries, "Single Manager for Conventional Ammunition," July 15, 1977 (hereby canceled)
(f) Deputy Under Secretary of Defense for Research and Engineering (Tactical Warfare Programs) Memorandum for the Deputy for Materiel Acquisition, Office of the Secretary of the Army (RDA), "Single Manager for Conventional Ammunition Manual 5160.65M," February 6, 1979 (hereby canceled)
(g) Title 10, United States Code, Section 2208
(h) Defense Acquisition Regulation (DAR)
(i) Secretary of Defense Memorandum to the Service Secretaries, "DoD Policy on Conventional Ammunition Acquisition and Production Capacity," June 1981
(j) Title 10, United States Code, Section 4532 (1976), Arsenal Act
(k) DoD Directive 5000.27, "Logistics Data Element Standardization and Management Program," March 28, 1975
(l) DoD Directive 5000.11, "Data Elements and Data Codes Standardization Program," December 7, 1964
(m) DoD Directive 5000.19, "Policies for the Management and Control of Information Requirements," March 12, 1976
(n) DoD 5000.12-M, "DoD Manual for Standard Data Elements," December 1980
(o) DoD 5025.1-M, "DoD Directives System Procedures," April 1981, authorized by DoD Directive 5025.1, "Department of Defense Directives System," October 16, 1980

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DEFINITIONS

1. Conventional Ammunition

a. Includes the following (assigned for management to the SMCA) and other ammunition explosives and components in federal supply classification (FSC) group 13 not specifically excluded herein.

(1) Small arms, mortar, automatic cannon, artillery, and ship gun ammunition.

(2) Bombs (cluster, fuel air explosive, general purpose, and incendiary).

(3) Unguided rockets, projectiles, and submunitions.

(4) Chemical ammunition with various fillers (incendiary, riot control, smoke, toxic agents, burster igniters, peptizers, and thickeners for flame fuel).

(5) Land mines (ground-to-ground and air-to-ground delivered).

(6) Demolition materiel.

(7) Grenades.

(8) Flares and pyrotechnics.

(9) All items included in the foregoing, such as explosives, propellants, chemical agents, cartridges, propelling charges, projectiles, warheads (with various fillers, such as high explosive, illuminating, incendiary, antimateriel, and antipersonnel), fuzes, boosters, and safe and arm devices, in bulk, combination, or separately packaged items of issue for complete round assembly.

(10) Related ammunition containers and packing and packaging materials.

b. Specifically excluded (retained for management by the Military Services) are the following:

(1) Guided projectiles, rockets, missiles and submunitions.

(2) Naval mines, torpedoes, and depth charges.

(3) Nuclear ammunition and included items such as warhead, warhead sections, projectiles, demolition munitions, and training ammunition.

(4) Cartridge and propellant-actuated devices.

(5) Chaff and chaff dispensers.

(6) Guidance kits for bombs and other ammunition.

(7) Swimmer weapons.

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(8) Explosive ordnance disposal tools and equipment.

(9) Related ammunition containers and packing and packaging materials.

c. Upon agreement between the SMCA and the Military Services, responsibility for excluded items may be assumed by the SMCA.

2. Wholesale Conventional Ammunition. All conventional ammunition stocks between point of production and point of receipt at first retail CONUS activity (such as, tidewater port, air base, post, camp, or station).

3. Retail Conventional Ammunition. Conventional ammunition stocks between point of receipt at first retail CONUS activity and point of consumption.

4. Financial Accountability. The maintenance by the responsible Military Services of summary financial data for transactions and inventory balances to provide the minimum essential basis for controlling, financing, planning, programing, and budgeting of items in the wholesale conventional ammunition inventory.

5. Custodial Accountability. The maintenance of data in the wholesale conventional ammunition inventory record to reflect the receipt, issue balance, and other quantitative and financial data determined by the SMCA as the minimum essential for proper control and management of Military Service stocks in storage.

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BIBLIOGRAPHY

(1) Charter for the United States Army Conventional Ammunition Stock Fund, April 25, 1980
(2) DoD Directive 4005.1, "DoD Industrial Preparedness Production Planning," July 28, 1972
(3) DoD Directive 4005.16, "Diminishing Manufacturing Sources and Material Shortages," December 3, 1976
(4) DoD Directive 4000.19, "Interservice, Interdepartmental, and Interagency Support," October 14, 1980
(5) DoD Directive 4000.25, "Administration of Military Standard Logistics Systems," November 12, 1976
(6) DoD Directive 4100.15, "Commercial and Industrial-Type Activities," February 4, 1980
(7) DoD Instruction 4115.1, "DoD Coordinated Procurement Program - Purchase Assignments," September 1, 1972
(8) DoD Directive 4120.3, "Defense Standardization and Specification Program," February 10, 1979
(9) DoD Directive 4140.1, "Inventory Management Policies," October 12, 1956
(10) DoD Instruction 4140.7, "Control, Supply and Positioning of Materiel," January 12, 1965
(11) DoD Instruction 4140.35, "Physical Inventory Control for Department of Defense Supply System Materiel," December 6, 1979
(12) DoD Directive 4145.19, "Storage and Warehousing Facilities and Services," August 13, 1975
(13) DoD Directive 4151.1, "Use of Contractor and Government Resources for Maintenance of Materiel," June 20, 1970
(14) DoD Directive 4151.16, "DoD Equipment Maintenance Program," August 30, 1972
(15) DoD Directive 4155.1, "Quality Program," August 10, 1978
(16) DoD Instruction 4155.4, "Inspection and Reporting of Departmental Industrial Reserve Plants/Maintenance Facilities," January 31, 1980
(17) DoD Directive 4160.21, "DoD Personal Property Utilization and Disposal Program," December 5, 1980
(18) DoD Directive 4165.2, "DoD Real Property Maintenance Activities Program," February 21, 1976
(19) DoD Directive 4165.6, "Real Property Acquisition, Management and Disposal," December 22, 1976
(20) DoD Instruction 4165.12, "Prior Approval of Real Property Actions," July 23, 1973
(21) DoD Directive 4165.20, "Utilization and Retention of Real Property," August 29, 1958
(22) DoD Instruction 4200.15, "Manufacturing Technology Program," July 14, 1972
(23) DoD Directive 4215.18, "Management of Defense-Owned Industrial Plant Equipment (IPE)," March 7, 1974
(24) DoD Directive 4275.5, "Acquisition and Management of Industrial Resources," October 6, 1980
(25) DoD Directive 4410.6, "Uniformed Materiel Movement and Issue Priority System," October 30, 1980
(26) DoD Directive 4500.9, "Transportation and Traffic Management," June 28, 1976
(27) DoD Directive 5000.1, "Major System Acquisitions," March 19, 1980
(28) DoD Instruction 5000.2, "Major System Acquisition Procedures," March 19, 1980

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(29) DoD Directive 5000.34, "Defense Production Management," October 31, 1977
(30) DoD Directive 5010.19, "Configuration Management," May 1, 1979
(31) DoD Directive 5025.1, "Department of Defense Directives System," October 16, 1980
(32) DoD Directive 5100.76, "Physical Security Review Board," February 10, 1981
(33) DoD 5100.76-M, "Physical Security of Sensitive Conventional Arms, Ammunition and Explosives," June 1978, authorized by DoD Directive 5100.76, February 10, 1981
(34) DoD Directive 5105.18, "Department of Defense Committee Management Program," April 25, 1975
(35) DoD Directive 5154.4, "The DoD Explosives Safety Board (DDESB)," January 24, 1978
(36) DoD Directive 5160.10, "Single Manager Assignment for Ocean Transportation," March 24, 1967
(37) DoD Directive 5160.2, "Single Manager Assignment for Airlift Service," October 17, 1973
(38) DoD Directive 5160.53, "Single Manager Assignment for Military Traffic, Land Transportation, and Common-User Ocean Terminals," March 24, 1967
(39) DoD Directive 5160.54, "Industrial Facilities Protection Program--DoD Key Facilities List," June 23, 1977
(40) DoD Directive 7040.2, "Program for Improvement in Financial Management in the Area of Appropriations for Acquisition and Construction of Military Real Property," January 18, 1961
(41) DoD Instruction 7040.4, "Military Construction Authorization and Appropriation," March 5, 1979
(42) DoD Instruction 7045.7, "The Planning, Programing and Budgeting System," October 29, 1969
(43) DoD 7110.1-M, "Budget Guidance Manual," August 4, 1981 (reprint), authorized by DoD Instruction 7110.1, October 30, 1980
(44) DoD Directive 7150.5, "Responsibility for Programing and Financing Facilities at DoD Installations Utilized by Two or More DoD Components," August 26, 1978
(45) DoD Directive 7200.7, "Accounting Pricing for Materiel Financed by Procurement Appropriations for Military Functions," December 16, 1964
(46) DoD 7220.9-H, "Accounting Guidance Handbook," February 1, 1978, authorized by DoD Instruction 7220.9, October 22, 1981
(47) DoD Instruction 7310.1, "Accounting and Reporting for Property Disposal and Proceeds from Sale of Disposable Personal Property and Lumber or Timber Products," July 10, 1970
(48) DoD Directive 7410.4, "Regulations Governing Industrial Fund Operations," September 25, 1972
(49) DoD Directive 7420.1, "Regulations Governing Stock Fund Operations," January 26, 1967
(50) DoD Instruction 7420.11, "Chart of Accounts and Financial Reports for Department of Defense Stock Funds," February 26, 1974

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PRODUCTION BASE EXPANSION AND MODERNIZATION PROGRAM

Mr. CHAPPELL. Mr. Robinson?

Mr. ROBINSON. The General Accounting Office has been reviewing the Army's program for modernizing and expanding ammunition production plants, and will be issuing a report later this year.

This is also a subject about which the committee has been concerned over the years, both the priority of production base funding versus ammunition end item funding, and also the policy for and allocation of production base funding.

Earlier this year GAO prepared a background paper and questions based on this review. I will insert the background paper in the record at this point.

[The document follows:]

ISSUES

The conventional ammunition production base is large, complex, and costly. It consists of 28 Government-owned plants operated by the Government or private contractors; 131 privately-owned plants; and 388 Government-owned production lines which are used in both Government and private plants. The total estimated acquisition cost for the Government's portion of the plants and equipment is about $16.8 billion. Most metal parts and fuzes are procured from private industry and most propellants and explosives are manufactured in Government-owned plants. The components are assembled into complete rounds at Government-owned plants commonly referred to as load, assemble, and pack plants. All of the ammunition production base is needed to produce the large volumes of ammunition quantities expected to be consumed during a major war. During peacetime, however, a large portion of the base is inactive due to the relatively small ammunition procurements in relation to the production capacities. Currently, 13 of the Government-owned plants are in layaway (i.e. inactive) and numerous production lines at the active plants are also in layaway.

In 1970, the Army started a multibillion dollar program to modernize and expand its deteriorated World War II vintage ammunition production facilities. The modernized facilities were expected to require less time to start up, reduce unit production costs, and eliminate environmental, health, and safety hazards associated with the older facilities. Since 1970, Congress has provided about $2 billion for the modernization and expansion program and an additional $1.78 billion has been provided for purposes such as:

Production support and equipment replacement projects to support planned peacetime procurements;

Layaway and maintenance of production facilities for future use;

Manufacturing methods and technology projects to advance the evolution of manufacturing processes and techniques; and,

Advance engineering for new production facilities.

The fiscal year 1983 Defense budget is expected to include about $325 million for the modernization and expansion program. The specific appropriation involved is the Procurement of Ammunition, Army, Appropriation (Activity 2—Ammunition Production Base Support).

There are numerous deficiencies at the Army's ammunition plants such as missing equipment in existing production lines. Many of these deficiencies could be corrected at a relatively low cost and such action could significantly shorten the production response time and increase output. The Army has identified many of these deficiencies, but has put a low priority on funding actions to correct them.

Some modernized facilities are highly automated and utilize computers. While this has provided benefits, it has also caused some problems for the Army. For example, some facilities are more difficult and costly to layaway, maintain in layaway and reactivate. Further, some more complex facilities require higher skill levels to maintain and operate and consequently, efforts are made to keep the lines operating longer than necessary to retain the labor skills. Finally, a manufacturer of some computers installed in the early 1970's has announced that spare parts will not be available after December 1982. Unless action is taken now it may be even more difficult to maintain the lines in the future.

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Once completed a modernization project not needed during peacetime but needed during wartime should be proven out, decontaminated, and layed away. In the past, the Army has not requested sufficient funds for decontamination and layaway on a timely basis. This resulted in higher costs to layaway the facilities and because of deterioration may make it more difficult to quickly reactivate the production lines during surge or mobilization.

Numerous production lines were improperly layed away after the conflict in Vietnam, purportedly because of insufficient funding. Yet, at the same time, hundreds of millions of dollars were being spent to modernize ammunition production facilities, such as TNT lines and small caliber ammunition production facilities. Some attempts are currently being made to properly layaway some of these lines. In addition, many modernized facilities require extensive modification. For example, the modernized TNT lines, Composition B facilities, propellant lines and ammonia oxidation plants require modification.

COST TO CORRECT DEFICIENCIES

Mr. ROBINSON. The paper refers to various deficiencies GAO found with regard to ammunition production facilities.

What is the Army's extimate of the cost to correct deferred deficiencies in existing ammunition production facilities?

General SKIBBIE. If you define the deficiencies as all deficiencies, we are talking in the vicinity of a billion dollars.

However, you must realize that many of those voids are in lines that have been laid away and would only be used in case of a mobilization. We do assess those voids on an annual basis. They are included in a plan to correct them.

Naturally, when we are talking about resources of that magnitude, that plan would extend over a considerable period of time. A simple answer: Approximately one billion dollars.

Mr. ROBINSON. What is the period of time over which the program would extend to correct the deficiencies?

General SKIBBIE. We have it programmed as part of our modernization expansion plan that would extend until 1992.

Mr. ROBINSON. Have you done cost/benefit analyses to assess the merits of funding deferred deficiencies in fiscal year 1983 in lieu of funding other projects like modernization?

General SKIBBIE. We haven't done any specific cost/benefit analyses. If you look at our production base program for 1983, you will see relatively little modernization in it. It primarily consists of initial production facilities required to produce new weapons or new munitions that are going to be produced in future years.

Actually the total dollars we have in the 1983 budget are $358 million for production base. Of those, $87 million is for more modernization, and of that $87 million, roughly one-third is to correct the voids and deficiencies to which you are referring, Mr. Robinson.

So we are doing what you are saying. We didn't premise it on a cost/benefit analysis. We premised it based upon what our assessment was of the urgency as well as the economic advisability of making those corrections.

Mr. ROBINSON. Granted the extent of deferred deficiencies and the need for modernization, we note the Army's fiscal year 1983 budget request includes a project for an administrative building at the Kansas AAP. What contribution will this make to increasing readiness and correcting deficiencies?

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General SKIBBIE. I guess in answering that I would disprove what I just said, but we did that portion based on a cost/benefit analysis. That is cost-effective.

The buildings that are used for administration at Kansas AAP are eleven in number right now. They were built in 1941. They either have to be rehabilitated or replaced.

If you do a straight cost/benefit analysis, you find out that it is cheaper in this case to replace it than to renovate it.

In that case it is not only economical. We feel we are also going to get increased productivity out of the people who are working there and give them an acceptable working environment.

The people who work in a building like that are professionals and semi-professionals. To attract people like that, you really have to give them a decent place to work. They haven't had a decent place to work in the past.

Mr. ROBINSON. How many people and how much money is involved?

General SKIBBIE. I think the cost of that building is $7 million. I will have to provide the number of people for you. It is certainly well in excess of a hundred, but I will have to give you the exact number for the record.

Two hundred and thirty, sir.

AUTOMATED LINES WITH COMPUTERS

Mr. ROBINSON. Given the fact that many ammunition production lines have been dormant for long periods of time, does the Army anticipate any problems in reactivating automated lines which use computers.

General SKIBBIE. Yes, sir, we do. That is a problem we are struggling with. If you go back to the start of the modernization expansion program—and I don't want to bother you—what we were faced with in our production base was World War I technology, which was used at the beginning of World War II to build this complex of ammunition plants.

It was laid away very quickly after World War II, reactivated for Korea, laid away again, and then reactivated for Vietnam.

All of that technology was what we call batch process. You would make a batch of TNT or a batch of some other type of explosive, and you couldn't ensure that it was exactly the same as preceding or succeeding batches. So when we went to assess the modernization expansion progran, we went to what is called a continuous chemical process so that you don't have it made in batches; it is a continuous process and it does have the same characteristics and you get better consistency in your munitions.

However, implicit in continuous processes are computer-controlled process controllers. Normally you don't buy a computer to lay it away, except in these cases where we are modernizing our mobilization base.

Implicit in that is laying them away. Yes, we do expect problems. We have addressed it with manufacturers. They don't have a good answer for it. We are still struggling with it.

But you get a problem of deterioration of the wiring; you get a problem of insect infestation; and you get a problem of the state of

the art passing you by. All I can say is we are aware of the problem; we are struggling to come up with a good solution, and I cannot give you a good solution at this time.

Mr. ROBINSON. What is being done to avoid significant delays in case it is necessary to start up the line?

General SKIBBIE. Certainly most of those modernization facilities which we have put in are still within the state of the computer art. However, as time goes on, the state of the art of the computers that were laid away are going to be further and further behind the current state of the art.

One option would be to keep at the ready a design minicomputer or microcomputer which could replace that computer that is in there, and perhaps that is one of the things that we will consider.

It remains to be seen, though, as to whether that is going to be one of the recommendations from the study or not.

Mr. ROBINSON. When will the study be complete?

General SKIBBIE. I can't give you a specific answer because we have been wrestling with it for several years now.

It is an extremely difficult problem. I would not want to leave you with the idea that those lines are not reactivatable now, though. They are reactivatable. Once they are laid away, the longer they are laid away, the higher the probability of deterioration.

Mr. ROBINSON. Well, it would certainly be incumbent upon the Army to devote sufficient attention and money to the matter so that the problem is solved and we would hope that the next time we address the question that we will have some answers, because it is of great importance.

General SKIBBIE. It certainly is, sir. We will attempt to do that.

QUALITY OF LAYAWAY AFTER VIETNAM

Mr. ROBINSON. Have you found that the ammunition lines that were shut down after Vietnam were generally shut down with proper attention to layaway procedures or are you finding that this was done in a, shall we say, sloppy manner?

General SKIBBIE. I wouldn't want to use the term "sloppy" because it was a question of funds.

If you go back to the way we got out of Vietnam, the funds were cut off rather quickly, and as a result the munitions accounts were cut rather dramatically.

For a specific answer, the Vietnam lines were not laid away as well as they could have been. We are now going back.

We started a program in 1980 to go back, look at the lines, assess them, rehabilitate them where needed, and properly lay them away.

We have the final $25 million for that in the 1984 program. That will complete that rehabilitation and re-layaway, if you will.

Mr. ROBINSON. With the expenditure of that $25 million, you will feel comfortable that the layaway process is in good shape?

General SKIBBIE. Yes, sir.

Mr. ROBINSON. Thank you, Mr. Chairman.

Give it to the reporter.

Mr. CHAPPELL. Let me ask a few general questions about Copperhead.

First of all, what is the status of the Copperhead program?

General SKIBBIE. It is in initial production, sir.

The first rounds began coming off the line in October. We reached the limited production rate of 200 per month in May. We just finished the OSD-directed reliability test.

We terminated it because we were required to achieve 80 percent reliability on those rounds and we were only achieving 67 percent reliability. So we terminated the test and are using the remaining test rounds to determine what the problems are.

We feel they are primarily process-related—that is, in the manufacturing process.

As you realize, this is a first round of its type, a precision-guided munition, fired out of a gun tube. It experiences seven to nine thousand Gs of acceleration so that any loose wires—wires that aren't folded exactly right—will tend to tear loose.

We are really pressing the state of the art—the mass production art—with this round.

We think we are going to get to 80 percent. However, we are limited in production to 200 per month until we demonstrate the 80 percent reliability.

Mr. CHAPPELL. Where are you now?

General SKIBBIE. 67 percent.

Mr. CHAPPELL. Tell us what that really means.

General SKIBBIE. It can be misleading. Eighty percent reliability sounds like something you would like to have. It certainly is. We would like to have a hundred percent reliability.

We recognize that there are very few things you can get a hundred percent on. Basically, though, you have to go back to the unit of measure, the single shot kill probability. What probability do you have of killing a target with a single shot? Reliability is one element, but there are many other elements.

So as we increase our reliability from 67 percent to 80 percent, our single-shot kill probability does not go up a corresponding amount.

So, for instance, right now——

Mr. CHAPPELL. Is that a factor of accuracy?

General SKIBBIE. It is a factor of whether you can designate the target properly and keep the designator on the target—that is, pointing a laser designator at it. Also, whether you can launch the round. Those are basically the functions that you look at.

We asked for a single shot kill probability of ——— when we developed the requirement for the Copperhead. That, in effect, said you are going to fire ———.

That only required a reliability of 58 percent. We have far exceeded that. With the reliability we have now, we are up to a single-shot kill probability of ——— percent.

So if you get up to 80 percent reliability, it only goes up to ——— percent single shot kill probability. There is not a direct linear relation there, if you will. That is not to say we don't want 80 per-

cent. We have a reliability improvement program that we have set up.

We want to get the reliability as high as possible. We think we will get it to 80 percent.

COPPERHEAD PRIORITY

Mr. CHAPPELL. What is the priority on Copperhead? Is this a priority item?

General SKIBBIE. It has been a high priority item through 1983, sir. Again it is a very effective tank killer. Because of TOA constraints in 1984 we left it unfunded in our POM. It was a high-priority item in our alternative POM. It has been raised as an issue in the POM deliberations by OSD and will be addressed later this week or in the early part of next week.

Mr. CHAPPELL. What about scheduling? Are you on schedule with it?

General SKIBBIE. The first unit to be equipped—I see Mr. Willson shaking his head no—is scheduled for this month. We expect to do that. It will be the 82nd Airborne Division down at Fort Bragg.

That doesn't mean they will immediately turn around and start firing these weapons; because of the cost we would not expect to have them fired in training because you don't obtain that much from firing the round for training.

What you train on is lasing the target with the laser designator. You train on communication techniques. You train on loading the round, which is a 53-inch long round and weighs over 100 pounds.

So we would expect to have the 82nd Airborne qualified as the first unit equipped later this month.

COPPERHEAD PRODUCTION AND DELIVERY SCHEDULE

Mr. CHAPPELL. The question on scheduling, are you on schedule?

General SKIBBIE. We were expected to get to 200 per month in January, I believe.

We didn't get it until May, so we are behind in production. Of course, we can't catch up because we are limited to 200. Even if we had the capability to exceed 200, we have no way of catching up because we are limited to 200 until we demonstrate the reliability.

Once we do that, then we would catch up. Yes, we are behind in production. I think we are stabilized at 200.

Mr. CHAPPELL. So you are up to the maximum you can go until you bring the reliability up?

General SKIBBIE. That is correct.

Mr. CHAPPELL. Do you have any prognosis on when that might be?

General SKIBBIE. When the reliability will be up? One of our problems is that we haven't fired enough rounds to get a statistically reliable sample of the production problems. So we have decided to do that.

We are going to fire over a hundred rounds to get a statistically reliable picture of what the production process is doing. Then we are going to correct it and then go back into a reliability demonstration.

I would expect that would be January of 1983.

Mr. CHAPPELL. But you say you are kind of pushing the state of the art? Are you still satisfied with the ammunition?

General SKIBBIE. Yes, sir. We are pushing the state of the art—not in the technology required for the rounds, but in the technology and techniques required to mass produce the round.

For instance, one of the problems we found in the testing was that there was too much epoxy. You would expect that you can't err on the side of too much epoxy. However, under acceleration at 9,000 Gs too much epoxy causes other things to move. They had a man absent from the production line. He was replaced by a fill-in. He put too much epoxy on the round. Luckily we caught that before we fired it. That is the type of thing that we are trying to get worked out in the system. That is why I say there are more process and production problems than there are design problems. I don't think there are any basic design problems.

Mr. CHAPPELL. Are you having any problems with the contractor?

General SKIBBIE. Getting his quality to be reliable and ensuring that he is aware of these problems in a mass produced round.

COPPERHEAD COST

Mr. CHAPPELL. What about the costs? Here is a letter from the Assistant Secretary of Defense to Chairman Whitten, dated May 17, 1982, over the signature of Jack Borsting, Assistant Secretary of Defense (Comptroller). It says the program costs increased $245.1 million, from $1.364 billion to $1.609 billion, due primarily to increased cost estimates based upon the contractor's latest proposal.

Are you having a problem in costs?

General SKIBBIE. Fiscal years 1980 and 1981 were cost-plus incentive fee contracts. We have had cost growth on those. We suggested to the contractor that we would like to cap that and convert those contracts to firm fixed price. We now have an agreement with the contractor to do that.

The 1982 contract will be a firm fixed price contract. Once we get that executed, I think that is going to solve our cost problem or at least put a cap on that problem.

Mr. CHAPPELL. Fixed price or fixed price incentive?

General SKIBBIE. We had cost plus incentive fee. We are going to firm fixed price for fiscal years 1981 and 1982.

Mr. CHAPPELL. What will that price be?

General SKIBBIE. For fiscal year 1982 the cost will be $35,100 a round. I can't give you the total contract cost right now.

Mr. CHAPPELL. Can you furnish that for the record?

General SKIBBIE. Yes, sir.

[The information follows:]

The contract cost for Copperhead in fiscal year 1982 is estimated to be $132 million.

Mr. CHAPPELL. In general terms, are you satisfied with costs? Has it accelerated beyond a reasonable state? What is the status of that?

General SKIBBIE. I really can't say we are satisfied with costs. We would like to get it much cheaper. If you look at what it costs to

build a tank and how many of these rounds it takes to kill a tank, you would have to say this is a cost-effective way of killing a tank.

It gives us a capability the Army has never had before. It allows you to reach out beyond the range of a direct fire weapon. There is no other way that we can reach out beyond the range of a tank gun, for instance.

Here is a weapon that we can put into a howitzer that will fire 16 kilometers. If you put your howitzers five kilometers behind your front edge of troops, you are talking about going ten to eleven kilometers in front of the forward line of troops. We have never had that capability before. You can designate from a helicopter. You can designate from an RPV when we get it launched or when we get it fielded; so this is a capability we have never had before.

So it is a dramatic capability. Having said that, we would like to get it cheaper.

FISCAL YEAR 1982 AND FISCAL YEAR 1983 CONTRACT COSTS

Mr. CHAPPELL. Do you still expect to be able to procure the 4,550 projectiles for the $141.1 million appropriated in fiscal year 1982?

General SKIBBIE. We expect to get 4,200 rounds for the $141.1 million.

Mr. CHAPPELL. Based on the results of the "Should Cost" study, do you still expect to be able to procure 7,269 projectiles for $183.6 million as budgeted in fiscal year 1983?

General SKIBBIE. I would like to point out that is one of those cases where inflation indices come into play. As the budget was submitted, we were cut in that line because of different expectations, different forecasts on inflation indices and the methodology with which we were inflating and applying those indices.

In addition, at that time it was assumed we were going to get very great savings with the conventional ammunition working capital fund, which is part of the single manager.

The contract authority was not provided to the conventional ammunition working capital fund. As a result those expected savings didn't occur in as great a quantity as we had expected.

That amounts to about a $16 million shortfall for Copperhead. In effect, we are $16 million short right there.

We didn't realize that until after the budget went in because of the cost growth we experienced in 1981. That adds up to another approximately $40 million shortfall in the 1983 request.

So we could not expect to get 7,600 rounds. We would expect to get approximately 5,400 rounds for that amount.

Mr. CHAPPELL. Are your saying that part of that accelerated cost is due to improper figures, improper assumptions to begin with? Is that what you are saying?

General SKIBBIE. It is an assumption we made in the budgeting process that did not come to pass. I do not want to say it was all that. Part of it was cost growth. When we made the 1983 estimate, we didn't know about the 1981 cost growth. That occurred and is now reflected in the estimated 1983 costs. We also have a budgeting problem in the conventional ammunition working capital fund that did not get what we call contract authority.

Therefore, you don't get the savings that you would expect. You get some savings from it, but it all rippled into Copperhead.

COPPERHEAD FOR THE RDF

Mr. CHAPPELL. Is the bottom line that that Copperhead remains a high priority item and in general you are satisfied with the progress you are making with it?

General SKIBBIE. Yes, sir. We think it is a needed weapon. We think it is an ideal weapon for the Rapid Deployment Force, particularly because there is a force that has to go light, has to go generally without the heavy armor, and this is the way to counter armor with a howitzer.

It is the first time artillery has had the ability to attack armor directly.

MARINE CORP PROCUREMENTS OF COPPERHEAD

Mr. CHAPPELL. What about the Marine Corps procurement program on Copperhead?

General CARSON. The Marine Corps has the Copperhead in 1983. The Marine Corps feels pretty much the same way that General Skibbie does. If it kills tanks, we would like it. We have been following it.

Mr. CHAPPELL. Have you budgeted money for it this year, in 1983?

General CARSON. $20.9 million in 1983.

Mr. CHAPPELL. How much before that?

General CARSON. $13.8 million, I believe, was deleted the previous year.

Mr. CHAPPELL. Is Copperhead as high a priority item with the Marine Corps as it is with the Army?

General CARSON. I would say with the bugs out and with the improvements, yes, sir. It would be of equal priority.

Mr. CHAPPELL. You deleted some last year. Was that because you were not yet satisfied with the reliability?

General CARSON. Yes, sir.

Mr. CHAPPELL. What you are saying is, with the reliability up, it is as high a priority in the Marine Corps as it is in the Army?

General CARSON. It is as high priority as in the Army.

Mr. CHAPPELL. The $20.9 million budgeted in 1983 will procure 791 projectiles. Given the most recent cost increases announced in the March Selected Acquisition Report, how many projectiles will actually be procured?

General CARSON. At the time, based on the cost to renew at that time, that is the way we had it figured. I would have to confer and recompute that.

Mr. CHAPPELL. Would you do so and provide it for the record? I assume your changes would be because of the same reasons that General Skibbie is talking about, is that correct?

General CARSON. Yes, sir.

[The information follows:]

Based on new unit cost of $34,600 the Marine Corps can procure 604 Copperhead projectiles.

COST TO PROCURE INVENTORY OBJECTIVE

Mr. CHAPPELL. We were told earlier this year that a ——— supply of Copperhead was ——— projectiles. Under the requirements of the fiscal year 1983 Consolidated Guidance, these must be procured in the fiscal years 1983 to 1987.

How much will it cost to procure ——— projectiles, according to your most recent estimates?

General SKIBBIE. According to the most recent estimates for our plan to procure around ———.

Mr. CHAPPELL. That is for ———?

General SKIBBIE. ———. However, I am not sure you caught a statement I made before—that is, even though Copperhead is a very high priority program with us, we were forced to leave it unfunded in fiscal year 1984 because of a shortage of TOA.

We would hope that——

Mr. CHAPPELL. That wasn't because of the fact you wanted to protect it?

General SKIBBIE. No, it is just a shortage of resources.

The number we have bought through 1983 will give us sufficient Copperheads to supply the Rapid Deployment Force for ——— days.

Mr. CHAPPELL. How much is included in the fiscal year 1983 POM for Copperhead?

General SKIBBIE. It should be $183.6 million.

Mr. CHAPPELL. That is the five year?

General SKIBBIE. Oh, I am sorry. You want the total for five years?

Mr. CHAPPELL. Provide it for the record.

[The information follows:]

From fiscal year 1983 to fiscal year 1987 we have programed $828.7 million for 35,916 rounds.

Mr. CHAPPELL. Provide for the record how much it will cost to procure a ——— for Copperhead, which is the authorized acquisition objective.

General SKIBBIE. We would never expect to procure that many Copperheads.

Mr. CHAPPELL. You would not?

General SKIBBIE. No, sir.

Mr. CHAPPELL. What is the authorized acquisition objectives? What does that mean?

General SKIBBIE. The authorized acquisition objective is normally construed to mean ——— supply.

Sufficient ammunition to sustain our forces for ———.

Mr. CHAPPELL. In the hearings with Secretary Marsh, he said that the ultimate objective is to stockpile ———.

Where does that ——— come from?

General SKIBBIE. It sounds like a reasonable number for ———. To the best of my knowledge we have never had a program to buy ——— of Copperheads.

Mr. CHAPPELL. So your ultimate, unless you got into a shooting war situation——

General SKIBBIE. I guess at one time a long time ago we might have talked about ———. That was termed a planning objective.

We don't have any program to buy ———. The program is for ———.

Mr. CHAPPELL. So you don't have any intention of recommending a phase-out of Copperhead?

General SKIBBIE. No, we don't. However, that may happen as a result of the shortage of resources.

Mr. CHAPPELL. Mr. Robinson?

Mr. ROBINSON. Mr. Chairman, I have no overriding interest in any of the additional suggested areas for questions. Unless your staff does, I would suggest we now recess.

Mr. CHAPPELL. I think we will put additional questions in the record.

[CLERK'S NOTE: Questions submitted by Mr. Chappell and the answers thereto follow:]

COPPERHEAD COST GROWTH

Question. The Army budget includes $183.6 million for procurement of 7,629 Copperhead projectiles. In addition, the Marine Corps has budgeted $20.9 million for its first procurement of Copperhead. Copperhead is a 155mm artillery projectile with a seeker which homes in on laser energy reflected from a target which is being illuminated by a laser designator. While procurement funding has been provided since fiscal year 1979, the Copperhead program has had a long history of technical, cost, and schedule problems.

As recently as the fiscal year 1980 budget submission, the total program cost for Copperhead was estimated to be $1.2 billion for a procurement quantity of 110,236 projectiles. In fiscal year 1981 the program quantity was reduced by more than half while the program cost was reduced from $1.2 billion to $1.1 billion.

According to the latest Selected Acquisition Report, the total program cost is now $1.6 billion. How many projectiles are to be procured in the current program?

Answer. The current program (February 1982 FYDP) includes 44,666 Copperhead rounds to be procured through fiscal year 1987.

Question. What accounts for the latest cost growth?

Answer. The latest cost growth is due to underestimating the complexity of producing Copperhead in large quantities.

Question. Last year, you identified 6 actions the Army was taking to reduce production costs of Copperhead. Why have these apparently had no results?

Answer. Seven cost reductions actions were completed. However, anticipated savings were reduced by production start-up costs. Nevertheless, the cost of Copperhead would have been higher without these actions. The status of those cost reduction efforts is as follows:

(1) Powdered Metal (7 components)—Manufacturing technology project was successfully completed. It is now undergoing qualification testing and should be implemented at the end of fiscal year 1982.

(2) Rigid Flex Circuit Board Fabrication—New process was successful and is being implemented. Yields and throughputs are up on initial production.

(3) Improvements in the Large Scale Integrated Circuits—Manufacturing methods and technology effort was completed, and improvements are being incorporated.

(4) Competitive Procurement of the Warhead Liner—Was successful in reducing the unit cost. Two additional sources were qualified and the negotiated price was one-third of the source original estimates.

(5) Process Change for Die Castings—Compared to previous investment castings, die castings savings are expected to achieve the original anticipated savings. Presently, production "D" rings are low cost die castings.

(6) Acceleration of the Economic Production Rate—To 700/month will certainly reduce unit cost. This will begin after demonstrating 80 percent reliability.

(7) Development of Alternative Sources and Breakout of Components Continues—In addition to the extractor and the training round, the government is now procuring the projectile container and providing it as GFE to the prime contractor.

Question. What confidence do you have that there will not be further cost growth for Copperhead, and what is the basis for this confidence?

Answer. The prime contractor has agreed to convert the fiscal year 1980 and fiscal year 1981 Cost Plus Incentive Fee contracts to Firm Fixed Price. Initial production problems have been resolved and significant quantities have been produced. This gives us actual cost experience which gives higher confidence of future production cost estimates.

Question. A Copperhead "Should Cost" study was to be available in May to support the fiscal year 1982 procurement. Was the study completed on May 7 as scheduled?

Answer. The "Should Cost" study was completed in June 1982.

Question. In explaining the cost growth in Copperhead, you have stated that the overhead rate was estimated to be 135 percent while actual experience has shown it to be as high as 261 percent. Also, General and Administrative (G&A) was estimated to be 4 percent, but is now 15 percent. Why have overhead rates changed, and how do you justify these higher figures? If 15 percent is considered to be an acceptable G&A rate, why were earlier cost estimates allowed to be based on 4 percent?

Answer. Earlier overhead and G&A rates were estimates based on future contractor plant operations. Actual negotiations between DCAA/DCAS and the contractor resulted in difference rates. The differences in these rates are attributed to changes in actual operations after estimates are made. Also there is a shorter lapse time between negotiated rates and the period they become effective. Therefore, the estimated rates will be less accurate.

Question. The budget estimates that the unit cost will go from $31,000 in fiscal year 1982 to $24,000 in fiscal year 1983. Given the past history of cost growth, how can you be confident that costs will come down so much in one year?

Answer. Based on actual experiences from producing 1,000 rounds, we have revised our fiscal year 1982 and fiscal year 1983 quantities to 4,200 rounds and 5,400 rounds, respectively. There-

fore, the unit costs are $33.7 thousand for fiscal year 1982 and $34.0 thousand for fiscal year 1983.

COPPERHEAD RELIABILITY

Question. Secretary Brown's production decision memorandum for Copperhead directed that the production rate be held to no more than 200 per month until a reliability of .8 is demonstrated. Last year, we were told that a Reliability Demonstration firing of 75 rounds was scheduled for June 1982. However, the demonstration would not be required if the required reliability was demonstrated in the Initial Production Test (IPT) of 125 rounds.

The IPT was scheduled for January to June, 1982. How many rounds were actually fired in the IPT?

Answer. Through June, 1982, there were 103 rounds fired in IPT.

Question. How many were direct hits?

Answer. Sixty five rounds scored direct hits.

Question. What was the demonstrated reliability in the IPT, both from the raw score and the results of the scoring confidence?

Answer. During IPT the demonstrated reliability was 64 percent.

Question. The Reliability Demonstration was to take place in June 1982. How many rounds were fired?

Answer. Forty-five rounds were fired in the Reliability Demonstration.

Question. What is the status of the Reliability Demonstration test?

Answer. The demonstration was terminated after it was determined 80 percent could not be achieved. The remaining 30 rounds are to be integrated into a reliability improvement program designed to acquire and demonstrate 80 percent or better reliability by January, 1983.

Question. What reliability has been demonstrated so far?

Answer. At the time the demonstration stopped 66.7 percent was achieved.

Question. Cold temperature tests were a problem in previous reliability testing. What cold weather testing will be conducted in demonstrating an 80 percent reliability?

Answer. All the 45 rounds fired in the demonstration were under ambient weather conditions. This was part of the plan approved by OSD. The cold temperature problem surfaced during early IPT firings. Fixes have been applied to the production line and will be verified as part of the reliability improvement program to demonstrate 80 percent or better by January, 1983. That verification will include cold weather testing.

Question. What are the current plans for demonstrating a .8 reliability for Copperhead?

Answer. Presently, Copperhead will undergo a Reliability Improvement Program with a planned retest no later than January, 1983. While the ambient environmental conditions of the Special OSD Reliability Demonstration will remain the same, the improvement program will include testing under severe environments.

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COPPERHEAD PRODUCTION SCHEDULE

Question. What are the starting and ending dates for delivery of the fiscal year 1980, 1981, 1982, and 1983 Copperhead procurements?

Answer. Fiscal year 1980, October 1981–July 1982; fiscal year 1981, July 1982–July 1983; fiscal year 1982, July 1983–August 1984; and fiscal year 1983, August 1984–August 1985.

Question. For the record, provide the monthly delivery schedule for each of the fiscal years above.

Answer. Due to modifications to the reliability test program which affect monthly delivery rates, that information presently is not available but will be provided at a later date.

Question. If the Army is to procure no additional Copperheads after fiscal year 1983, what would be done with those which have already been funded?

Answer. Copperhead rounds procured through fiscal year 1983 will be set aside to support ——— contingencies.

Question. What would be an appropriate phase out budget plan in fiscal year 1983?

Answer. There is no phase-out budget plan for Copperhead under development at this time.

Question. What would be the impact of this action on procurement in fiscal year 1983 of related items such as the Ground Located Laser Designator (GLLD), the Fire Support Team Vehicle (FISTV), the Modular Universal Laser Equipment (MULE), and Army Helicopter Improvement Program (AHIP)?

Answer. Copperhead procurement does not affect other items such as GLLD, FISTV, and AHIP. The need for these systems is based on requirements to modernize the overall mission performance of Field Artillery ground observer teams, called FIST, and to upgrade the capability of the Army scout helicopter. The Army has not made a decision to acquire the MULE.

SINGLE MANAGER FOR CONVENTIONAL AMMUNITION

INTEGRATED AMMUNITION PROCUREMENT PLAN

Question. Dr. Adams, your statement says that the Single Manager prepared a 5-year integrated ammunition plan for use by the OSD staff during consideration of the fiscal year 1984 to fiscal year 1988 POM. Who actually prepared that plan?

Dr. ADAMS. Each Service prepared its own individual fiscal year 1984–88 POM. The Executive Director for Conventional Ammunition (EDCA) consolidated those POMs into the 5-year Integrated Conventional Ammunition Procurement Plan, which includes the EDCA's analysis and recommendations. The EDCA was materially assisted by the staff at the U.S. Army Armament Materiel Readiness Command. Assistance was also provided by the Military Services. The final plan was coordinated with all of the Military Services prior to submission to OSD for their use in the POM review process.

Question. Did he make recommendations to the Services to change certain portions of their fiscal year 1984 ammunition budget as a result of his review?

Dr. ADAMS. Yes. The EDCA made 50 recommendations which impacted variously on all of the POM years, including fiscal year 1984.

Question. On what basis were these recommendations made?

Dr. ADAMS. The recommendations were made on an economic basis only, since the Single Manager is not in a position to assess the operational implications (i.e., the impact on readiness and warfighting capability) that the recommendations would have. The recommendations were based on considerations of economical production runs, the need to foster and protect a healthy, warm base, balanced production base workloading, efficient and effective investment in the production base, and the achievement of economies through cross-leveling of stock among the Services.

Question. What happened to those recommendations?

Dr. ADAMS. The EDCA provided his recommendations to OSD and the Military Services. The Military Services are in the process of analyzing the impact of those recommendations on their operational readiness. OSD is also currently analyzing those recommendations.

Question. Does the Single Manager or his representative have the authority to force the Services to accept his recommended changes?

Dr. ADAMS. No. As previously mentioned, the Single Manager is not sufficiently knowledgeable of the operations of the Services to force them to accept his recommended changes. As Mr. Addabbo said previously today, "I cannot envision the Single Manager giving a directive to the services, jeopardizing or in any way reducing readiness or the effectiveness of the supplies or the service to conduct their part of the war." I agree with Mr. Addabbo.

Question. Would this authority not be desirable in the interest of economy and efficiency in ammunition procurement?

Dr. ADAMS. No, for the reasons I just mentioned. The pursuit of economy and efficiency must be tempered by the overriding interests of operational readiness, which only the individual Military Departments are qualified to assess.

VIPER

Question. Viper is a shoulder-fired anti-tank weapon. It is intended to replace the current Light Anti-tank Weapon (LAW). The program has been a matter of some controversy in recent years. There have been serious cost overruns and program slippage due to technical difficulties. In addition, the Army had to change its requirements since Viper turned out to be heavier than required, could not ———.

Last year Congress gave approval to begin production of Viper but expressed concern about the cost and technical problems and directed the testing and evaluation of alternative systems. The testing of alternative systems was to address the needs of all services and include involvement from the Office of the Secretary of Defense. The testing is to be completed on or before July 31, 1983.

Dr. Adams, your statement says that OSD will conduct a Viper program review to consider several alternatives. When will that review take place?

Answer. 30 August 1982.

Question. Who will be involved in this review?

Answer. Dr. Wade, the Principal Deputy Under Secretary for Research and Engineering, will chair the review. Participating in the review will be various elements of his staff and representatives from the Army, Marine Corps, Director Plans Analysis and Evaluation (PA&E), Defense Director Test and Evaluation (DDTE), and Manpower, Reserve Affairs and Logistics (MRA&L).

Question. What specific alternatives are to be considered?

Answer. (1) Continue Viper at scheduled production levels and advise Congress that alternatives to Viper will be considered. (2) Renegotiate the fiscal year 1982 contract for a two-step low/high rate fixed price contract for procurement of Viper based on experience of the fiscal year 1981 pre-production build and the cost reduction effort. A low rate will be maintained to avoid a break in the production with a ramp up to full production only after cost reduction has been achieved. The goal for release to full production is a unit cost which, averaged over the planned production run of Viper taking into account reasonable learning curve factors, is not greater than about double the cost of the current M72 LAW. (3) Terminate production of Viper and procure the M72A3 LAW as a contingency hedge until a cost-effective alternative is available.

ALTERNATIVE TESTING PROGRAM

Question. Are there any problems with the alternative testing program that the Committee should be aware of?

Answer. Yes, the interpretation of the congressional direction that says we must have a fiscal year 1984 procurement decision on an alternative to VIPER has caused the Army significant problems. A decision to procure a system cannot be made until extensive development and operational tests have been conducted. These tests are designed to verify that the system can be safely fired by a soldier and that the system performs satisfactorily in areas deemed essential by the user. That kind of test requires approximately 1,000 rounds. Trying to squeeze such an extensive test into a schedule that will allow a fiscal year 1984 procurement decision does not appear possible. Not only is sufficient time required to conduct the tests, but adequate lead time is required by contractors to provide the rounds required to conduct the tests. This interpretation has also forced a competitive aspect on what was originally envisioned as a Consumer's Report-type test to verify contractor's claims. This has required the Army to carefully lay out an acquisition strategy and establish evaluation criteria by which a system will be selected to enter follow-on development and operational tests. The Committee should also be aware that the Army has requested that $10 million in fiscal year 1982 funds be reprogrammed to cover the costs of the evaluation effort. We solicit your support in obtaining prompt approval from the various committees involved so as not to further delay the program.

Question. The legislative history of the requirement to test alternatives to VIPER makes it clear that the results were to be available for a fiscal year 1984 funding decision. Will you have completed

testing, including operational testing, by July 1983 as required? If not, why?

Answer. Testing will not be completed by July 1983; only screening tests. The planned LAW evaluation calls for screening tests (70 rounds) of candidate weapons during the period August 1982 through July 1983. In-Process-Review (IPR) to consider the results of the evaluation will be held in mid-September 1983. At that time the services may select a weapon to enter Development Test/Operational Test (DT/OT) testing. Although this phase will begin in October 1983, the contractors for the system selected must be given enough lead time and associated test time which may allow a fiscal year 1984 procurement decision, but it will most likely be fiscal year 1985. The follow-on DT/OT are not scheduled prior to July 1983 due to the high cost of conducting DT/OT type testing for all candidate weapons and the strong possibility that viable candidate weapons would be eliminated because they could not be provided in sufficient quantity (approximately 1,000 rounds) in time for testing to be completed by July 1983.

Question. Will there be sufficient testing by July 1983 to decide whether or not to continue VIPER production? If not, why not?

Answer. By September 1983 the 70-round screening test and subsequent evaluation will be completed. At that time there will either be a viable alternative to VIPER or there will not. If there is no viable alternate, the Army will continue to procure VIPER. Until such time that an alternative weapon is selected, goes through DT/OT, and can be procured in quantity, the Army believes it is prudent to continue VIPER production at some rate to maintain a warm base.

Question. When will you be in a position to decide by July 1983?

Answer. By July 1983 the 70-round screening test will be complete. That will enable the Army to determine by September 1983 whether or not a viable alternative to VIPER exists and can enter DT/OT.

Question. The delays in testing alternatives to VIPER would seem to indicate an Army/OSD strategy to stretch out the testing as long as possible so that VIPER gets so far down the road that it cannot be stopped. (a) Would you care to comment? (b) How can you allow such a relaxed attitude to this, given the clear intent of Congress?

Answer. It is neither the intent nor the strategy of either the Army or OSD to stretch the testing as long as possible so that VIPER cannot be stopped. The delays have been due to a number of fundamental changes in the testing program. Initially it was planned to simply conduct a "Consumers Report"-type test on available candidates. When it became clear that a procurement decision on an alternative was desired in fiscal year 1984, it required the Army to fit into the schedule adequate development and operational tests (DT/OT) to support a procurement decision. Adequate DT/OT consists of tests requiring approximately 1,000 rounds. Contractors must have adequate lead time (up to 1 year) to build that many rounds. Development and operational tests of this scope are not affordable if conducted on each of the candidate systems; therefore, screening tests must be conducted to select a candidate (if any) for DT/OT. Because the screening tests are used to select one

candidate, they become competitive and require both the Army and USMC to develop criteria by which these systems will be evaluated for ultimate selection for DT/OT and require an acquisition strategy to be developed in sufficient detail to support the program. Additional time was used in an attempt to harmonize the Army and Marine Corps requirements.

Question. Dr. Adams, your statement identifies the M72-750 as an alternative that appears to be attractive. Last year the contractor consortium submitted a proposal to develop and test the improvements. Has the Army funded this proposal? If not, why not?

Answer. The Army has not funded this proposal although the Army is very interested in it. If the improvements in armor penetration and speed of flight are achieved as claimed, they could make the system attractive to the Army as a possible supplement or replacement for VIPER. When Congress approved release of fiscal year 1981 and 1982 funds for VIPER production, it also directed the Army to commerce testing all available light antiarmor systems, foreign and domestic, within 90 days of contractor notification of availablity and expression of desire to test. In light of the Congressional direction the Army believes funding the A/S Raufoss proposal would be unfair to other competitors; however, it is expected A/S Raufoss will enter the M72-750 as a candidate for these tests.

Question. What role is OSD playing in the testing program? What is the role of the other Services?

Answer. The Defense Director Test and Evaluation has reviewed the Services proposed test plan for testing of alternatives to VIPER. They have sent the plan back to the Services for rework to assure:

1. That any weapon system to be considered must be available for testing by April 1983 so that all testing will be complete before a production decision.
2. That the tests will be jointly conducted with an Army and Marine Corps test team examining all candidate systems under identical conditions and at the same locations with the use of a common data base.
3. That VIPER and the M72 A3 LAW will be fired as and if necessary to ensure adequacy and accuracy of data on these weapons under the conditions chosen for the competitive analysis.
4. That appropriate field tests with troops should be conducted to examine human factors, firing results and operational suitability issues.
5. That the examination, test and analyses must be adequate to permit a comparative evaluation of the reliability of the candidate systems and a credible projection of adequacy of weapon reliability in field service.

The Army and the Marine Corps will jointly participate in the testing of alternatives but will have separate criteria for evaluation.

Question. Will you be able to comply with the intent of Congress? If not, why not?

Answer. The Army probably will not be able to comply with the intent of Congress as defined above. The Congressional direction was to test all available systems and to complete testing by July

1983. The Joint Conference language further stipulated that testing would be accomplished within available funds. To support a procurement decision, sufficient development and operational tests (DT/OT) must be conducted for type classification. Approximately 1000 rounds would be required for DT/OT. This quantity could be reduced, depending upon safety certification and review of foreign testing results. Cost to conduct DT/OT for all available candidates would be prohibitive. It is also doubtful that potential contractors could produce sufficient quantities for DT/OT for delivery and completion of tests by July 1983. Because of this, the tests scheduled to be conducted by 31 July 1983 will not be sufficient to meet the intent of Congress as defined in the paragraph preceding this question. These tests are only designed to screen candidate systems and determine if a viable alternative to VIPER exists. To meet the intent of Congress as defined above requires extensive development and operational tests (DT/OT). Such tests are scheduled to be conducted if a viable candidate emerges from the screening tests. The Army desires to have these DT/OT tests completed in time to commit fiscal year 84 funds to an alternative (if test results warrant) but recognizes a fiscal year 1985 decision is more likely because adequate leadtime must be allowed contractors to produce rounds for DT/OT.

REQUIREMENTS DOCUMENT FOR LIGHT ANTITANK WEAPON

Question. On March 24th of this year, Principal Deputy Under Secretary Wade directed the Army and the Marine Corps to update their Joint Service Operational Requirement (JSOR) for the Improved Light Anti-tank Weapon. The update was to include changes in the threat, organizational and operational concepts, and affordability. The new JSOR was to be completed by August 1, 1982. What is the status of this effort?

Answer. The Marine Corps has approved a new LAW requirement document which they are in the process of submitting to our office. The Army has reaffirmed its 1975 requirement statement for a Light Anti-armor Weapon (LAW). Marine Corps requirements are different. The Army has consciously traded off greater penetration to maintain a 6 to 7 lb. weight requirement. The Marine Corps places more emphasis on penetration of tank frontal armor and may be willing to accept greater weight. The OSD will address the need for separate and distinct Service requirements at the VIPER program review to be held 30 August 1982.

Question. Can you assure the Committee that the new JSOR will be written in such a way to allow a fair consideration of alternatives to Viper?

Answer. The existence of the Marine Corps-approved requirement for a LAW opens up the weight restriction imposed by Army. Thus, weapons up to 20 pounds will be jointly tested by the Services. Different evaluation criteria will be applied by each Service. Current likely candidates for the joint evaluation are: ARMBRUST PIP; Norwegian I-LAW (M72-750); AT-4; UK LAW-80; APILAS (shortened version).

VIPER COST

Question. The original design to unit price cost for VIPER was $78 in fiscal year 1976 dollars and as recently as 1980 the Army testified that the unit cost would be $300. The most recent data indicates that the Fiscal Year 1981 unit cost for the tactical round will be $18,800; the fiscal year 1982 cost will be $1,453; and the fiscal year 1983 cost will be $1,248. The total program unit costs are said to be $963 in Fiscal Year 1982 dollars. Does this total program unit cost include all R&D and nonrecurring costs, including facility costs?

Answer. The $963 is an average unit procurement cost for the period Fiscal Year 1982 thru 1987 expressed in fiscal year 1982 dollars. It does not include Research Development Test and Evaluation (RDTE) nor facilities costs.

Question. On what total production quantity is the $963 unit cost based?

Answer. It is based on the Army's fiscal year 1982 thru fiscal year 1987 planned buy of 669,000 rounds. This in turn is based on a unit cost curve that assumes 910,100 rounds are bought by all services through the fiscal year 1982 thru fiscal year 1987 period and there is full USMC and Navy participation.

Question. How many Viper tactical rounds are funded in the fiscal year 1983 POM and in the fiscal year 1984 POM for the Army, for the Marines, and for the Navy?

Answer.

FISCAL YEAR 1983 POM

	1983	1984	1985	1986	1987
Army	86,500	113,000	122,000	117,000	149,000
Marine Corps	6,815	9,778	55,374	55,373	55,373
Navy	3,000	5,760	5,760	5,760	5,760

FISCAL YEAR 1984 POM

	1984	1985	1986	1987	1988
Army	[1]130,000	131,000	131,000	131,000	131,000
Marine Corps	6,185	9,630	13,075	17,331	48,000
Navy	0	4,200	5,760	7,394	7,796

[1] Beginning in fiscal year 1984 the Viper line will be changed to a generic LAW line for both the Army and USMC.

Question. What will be the unit cost in fiscal year 1983 and on a total program basis if the U.S. Marine Corps and the Navy decide not to buy Viper?

Answer. Assuming the Army only buys 86,500 and there is no additional facilitization in fiscal year 1983, a unit cost increase of $100 per round can be expected at the total program level if the USMC and Navy drop out. This would mean an average unit procurement cost of $1,449 in fiscal year 1983.

Question. The Army has funded a $7.3 million cost reduction effort for Viper. The program unit costs cited above assume that this cost reduction effort will be successful. How confident are you

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that you will actually achieve the cost reductions that you project? What will be the unit cost of Viper if these cost reductions are not realized?

Answer. Very confident. These cost reduction design changes have undergone system integration tests with good results. System qualification tests (100 rounds) and safety certification tests (72 rounds) are planned for September and October. Current projections are that the $157 cost reduction target will be exceeded. Although very unlikely, if for some reason these cost reductions are not realized, the unit cost would be $157 higher. For instance, the fiscal year 1982 unit cost would be $1,610 versus $1,453.

Question. The fiscal year 1981 and fiscal year 1982 procurement contracts are cost-plus contracts. What confidence do you have that actual costs under this contract will allow you to buy 1,000 tactical rounds in fiscal year 1981 and 60,000 tactical rounds in fiscal year 1982 as forecast earlier this year?

Answer. Cost Performance Reports to date and additional data presented at contractor/government monthly programs reviews indicate we are within cost for fiscal year 1981. The successes recently experienced in the cost reduction program increase our confidence in meeting the 1982 goal.

Question. The fiscal year 1983 contract is intended to be a fixed price incentive contract for 86,000 rounds at $107.4 million. Is this funded at target or ceiling price? What additional would be required if the ceiling is funded?

Answer. The $107.4M for 86,500 is funded at target plus $7.2M. An additional $9.2M is required to fund it at ceiling.

VIPER PRODUCTION FACILITIES

Question. The Committee learned earlier this year that the Army had reprogrammed $11 million in fiscal year 1982 for unanticipated production facility costs. An additional $12 million is included in fiscal year 1983 for production facilities.

What were the original estimates (1976) of the cost of facilities to produce Viper at a rate of 10,000 per month on a one-shift, five-day-a-week basis?

Answer. The 1975 Development Plan Estimate for facilities was $21.4M. The actual facilities dollars appropriated by Congress in the late '70s were as follows:

Metal Parts & LAP (fiscal year 1978)	$13.4M
Carborane (fiscal year 1977)	5.0M
Carborane (fiscal year 1978)	2.5M
Total	20.9M

Question. What is the current estimate for these facilities?

Answer. The current estimate of the cost of facilities to build 10,000 rounds per month is $71.2 million.

Question. How much has been appropriated to date for these facilities, including the $11 million reprogrammed in fiscal year 1982?

Answer. $59.2 million.

Question. The Army has deferred the $12 million fiscal year 1983 project pending the results of the alternatives testing program. On what procurement line is this funded?

Answer. The $12M facilities project for fiscal year 1983 is neither programmed nor funded. If the decision is made to fund, an internal Army realignment in the Production Base Support funding line would be required.

Question. What specific production capacity will be added with the $11 million in fiscal year 1982 and the $12 million in fiscal year 1983? When will each additional increment be completed and proven out?

Answer. The $11M in fiscal year 1982 provides the capability to build 6,000 VIPERs per month on a 1-shift, 8-hour, 5-day-per-week (1-8-5) basis (with the exception of Brunswick, which would need more than 1 shift to build 6,000 launch tubes and motor cases per month). The above may be adjusted based upon a currently ongoing facilities audit. Completion and prove-out is scheduled for June 1983. The $12M in fiscal year 1983 provides the capability to build 10,000 Vipers per month on a 1-8-5 basis. Completion and prove-out of the fiscal year 1983 project, if funded, is tentatively scheduled for March 1984.

Question. For the record provide a list of the monthly production rate (1-8-5) available at each of the Viper component facilities, with and without the $11 million in fiscal year 1982 and the $12 million in fiscal year 1983.

Answer. Following are 1-8-5 production rates at each of the Viper component facilities:

	GD	ARC	BRUN	BULOV	IAAP
Current capability	3.5	3.0	1.2	2.0	10
With fiscal year 1982 facilitization	6	6	4	10	10
With fiscal year 1983 facilitization	10	10	10	10	10

120mm Tank Gun Ammunition

Question. The fiscal year 1983 budget includes $10.9 million for the procurement of 120mm tank ammunition. This ammunition will be used in the M1E1 tank which will be equipped with a German 120mm smooth bore gun system rather than the 105mm gun system on the M1 tank. What specifically will these funds procure?

Answer. Specifically these funds will provide control components, first article test hardware and delivery of full-up rounds as follows:

	Quantity	Amount (millions)
XM827/829	720	$2.9
XM831	1,500	2.9
XM865	2,500	5.1
Total	4,720	10.9

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Question. Summarize briefly, and provide for the record, the development program and current milestone for each of the four projectile types involved in this program, including the estimated type classification dates.

Answer. There are four rounds which are a technology transfer, fabrication and a test (TTF&T) project involving the German-developed rounds. There is one additional US-developed round (XM829), which is an improvement over the German round and takes greater advantage of the higher energy of the 120mm gun. Milestone dates are:

XM827—TTF&T through 3QFY83; TC, 3QFY83.
XM830—TTF&T through 4QFY84; TC, 4QFY84.
XM831—TTF&T through 3QFY83; TC, 3QFY83.
XM865—TTF&T through 1QFY84; TC, 1QFY84.
XM829—Complete ED 1QFY84; TC, 1QFY84.

It is planned to type classify as limited procurement the XM831, XM827, and the XM865 in Dec 82 (1QFY83); the fiscal year 1983 buy will support this action.

Question. How much has been spent on R&D for each round and what remaining funding is projected?

Answer:

Round—Spent through fiscal year 1982—Remaining

XM827—$11.407 million—$4.152M
XM829—$22.030 million—$9.784M.
XM830—$18.304 million.
XM831—$5.183 million.
XM8865—$4.936 million—$6.20M.

(Note: $4.152M remains on the TTF&T project for the XM827, XM830 and XM831).

Question. The committee was informed earlier this year that the M1E1 tank production had slipped from 1984 to 1985 because of delays in licensing agreements and difficulties in ammunition development.

Why is ammunition procurement being budgeted so far in advance of gun procurement, especially when there have been development problems?

Answer. The fiscal year 1983 buy will assist in an orderly transition to production. The gun (XM256) will be TC'd 3QFY83. Since gun is an integral part of the M1E1 tank, procurement of long lead time material has been approved in fiscal year 1983. Roll-off of the gun production is anticipated in February 1985 to support the M1E1 tank production roll-off in August 1985.

Ammunition for the M1E1 tank must be made available at the same time frame (August 1985). Our system contractor (Honeywell) requires a twenty-two month lead time for the ammunition production since it is the first of its kind. Due to this long procurement lead time and the fact that common components (propellant, stub cases, etc) must be built, tested, and accepted in quantity before complete rounds can be produced, first deliveries from the fiscal year 1983 buy are not expected until July 1985. The facilitization of the base for production of 120mm ammunition is in phase with this schedule.

Question. What specific ammunition development problems have been encountered?

Answer. (1) Improvement of the German fuze in their DM12A1 HEAT-MP cartridge to meet US user requirements has been more difficult than anticipated, and this problem has delayed TC of the XM830 HEAT-MP until 4th Quarter fiscal year 1984.

(2) TTF&T of a 120mm KE training round was delayed due to nonavailability of an acceptable GE design (DM38 LKL) until January 1982. TC of the XM865 is scheduled for the 1st Qtr fiscal year 1984.

(3) A 1980 Case Jamming problem in Germany required resolution. The redesigned cartridge case (straight-wall) is now available to be introduced into the TTF&F program.

(4) Delayed availability of the cartridge case resin formulation and a US source was a major problem which was resolved during 1981. However, it delayed progress prior to that time and increased costs.

(5) Change by the Germans of the design for their DM12 HEAT-MP from cast charge to a press-load with different explosive in 1980 required redirection of the TTF&T effort and increased costs. With the exception of item (1), which has resulted in a revised schedule, the above items have been or are being resolved and are not expected to adversely affect the fiscal year 1983 buy.

Question. What are the current milestones for the M1E1 program?

Answer. Development Test II—January 1983 (begins).

Operational Test II—October 1983 (begins).

Army Systems Acquisition Review Council—June 1984. Defense Systems Acquisition Review Council—July 1984.

Initial Production Roll-Off—August 1985.

155MM ROCKET ASSISTED PROJECTILE (RAP)

Question. The budget includes $17.7 million for procurement of 24,000 155mm Rocket Assisted Projectiles (RAP).

Last year the Army stated that an optimum buy quantity was about 93,000. This year the requested buy is only 39,000 (Army 24,000 and FMS 15,000). What is the cost per round to produce the M549A1 (1) at the MSR of 72,000 and (2) at the 39,000 requested?

Answer. The cost per round to produce the M549A1 at MSR (72,000) is $713.20. There is no unit cost estimate to produce 39,000 in that this is an uneconomical procurement quantity.

Question. Why doesn't the Army increase its fiscal year 1983 program to take advantage of reduced unit costs?

Answer. It is the Army's position that the program should be increased to an economical quantity. However, additional funds are required. On 16 Mar 82 the Senate Armed Services Committee was informed this budget line requires additional funds in order to receive advantage of reduced unit costs.

Question. The LAP facility X-rays each projectile twice to check for cast quality. The second X-ray has never revealed any new defects and, therefore, is of questionable value. Why is a second X-ray necessary? What is the cost of the additional X-ray?

Answer. Recently a review of the quality data on the second X-ray and other tests was made by ARRCOM. As a result of this review the ARRCOM Product Assurance Directorate recommended on 30 Mar 82 that the second X-ray be eliminated as a requirement at the LAP facility. The cost of the second X-ray was estimated to be about $6.00 per round. The second X-ray will be discontinued for the August production.

Question. Is the fiscal year 1983 budgeted quantity an economical buy? If not, what additional quantities and costs would be required to make it economical?

Answer. The fiscal year 1983 procurement of M549A1 is not budgeted at an economical rate. To achieve this level requires an increase of 48,000 projectiles at a cost of $35.4 million.

105MM HIGH EXPLOSIVE ANTI-TANK AMMUNITION

Question. The budget includes $53.3 million for procurement of High Explosive Anti-Tank (HEAT) rounds for 105mm tank guns. The fiscal year 1983 request is entirely for training rounds since serious technical and production problems with the tactical round have created a large backlog of deliveries from previous fiscal years. I would like to ask questions on both the tactical round and the training round.

In response to questions last year, the Army stated that the Initial Production Test (IPT) was planned for June 1981 and that the Army fully expects success in that test. We understand the testing had not taken place as of January 1982. Please provide reasons for delay.

Answer. The production start-up problems of the metal parts producer have been resolved and production is continuing. However, additional testing of the spike assembly (full frontal area impact switch) is required prior to authorizing the production of the first article and initial production test quantity. This additional testing is scheduled for completion the last week of July. The initial production test quantity should be available for shipment to TECOM the first week of October 1982.

Question. We understand that there is a problem with cracked projectiles, that the manufacturer unilaterally modified projectile acceptance procedures and that some 37,000 projectiles must be inspected for cracks. How much will it cost to inspect these projectiles?

Answer. The total quantity requiring redundant ultrasonic screening is approximately 50,000 rounds at an approximate cost of $500,000.

Question. Is the manufacturer liable for these costs?

Answer. Except for a quantity of approximately 10,000 projectiles which were rescreened, the projectiles were ultrasonically tested in accordance with procedures approved by the government. Since rescreening has revealed ultrasonic rejects in all lots produced (50,000 projectiles), it is considered that the contractor is not liable. The problem was one of debugging the ultrasonic equipment, establishing proper standards and performing the test in the proper sequence in the manufacturing process.

Question. Given the numerous problems with this round why isn't the Army monitoring quality assurance procedures more closely?

Answer. The contractor changed the approved testing method without prior approval. This change affected approximately 10,000 rounds. The change involved disconnecting an automatic reject stamp and internally changing machine logic to eliminate a double ultrasonic scan. The Defense Contract Administation Services (DCAS) was aware of the eliminated automatic reject stamp but not the changed machine logic. Since reject stamps were to be manually applied, no impact was expected. DCAS is monitoring the contractor closely.

Question. The Army revised its acceptance procedures to provide for acceptance of cartridge lots which fail static testing, but pass dynamic testing. Isn't this merely a lowering of performance standards in an attempt to get more rounds accepted? Please explain.

Answer. Utilizing the dynamic test rather than the static test to accept the spin compensating copper cone has not degraded the capability of the round to defeat the required thickness of armor plate. In all ballistic tests the rounds have completely penetrated the armor plate with sizable exit holes.

Question. The spike assemblies are a mechanism to increase the cartridge's reliability by enabling it to function when it grazes a target as well as when it hits a target directly. However, some 30,000 spike assemblies failed to meet functioning criteria. These assemblies were accepted on waiver and will be used in the manufacture of the M456A2—the model with graze capability. What was the failure rate of these spike assemblies?

Answer. The three spike assembly lots constituting the total fiscal year 1979 procurement failed to meet static acceptance criteria by a very small margin. However, complete rounds passed dynamic testing and spike assemblies were accepted.

Question. Are cartridges manufactured with these assemblies significantly better against tanks than the M456A1—model without graze capability?

Answer. The M456A2 provides a significant effectiveness improvement with regard to improved armor functioning (non-nose and high obliquity impacts) and graze type functioning over the M456A1.

Question. How much does building in graze capability increase the cost of the M456 cartridge?

Answer. For the initial quantity of 30,000 the cost of adding the full frontal area impact switch was approximately $100. Production quantities in subsequent years expect to yield a cost differential of approximately $50.

Question. It seems that the problem with graze capability should have been detected during manufacture of the 30,000 spike assemblies. Has the quality assurance program for this round broken down?

Answer. Production of the spike assemblies was initiated only after the successful completion of the first article Test in accordance with normal assurance provisions. Investigation has found no discrepancies in the parts produced by the spike assembly manu-

facturer. It is not believed that any problem was caused by a breakdown in the quality assurance program.

Question. What is the production schedule for funded programs?

Answer. M456A2 (Including Marine Corps and FMS):

November 1982	10,000
December 1982	10,000
January 1983 through September 1984 (per month)	15,000
October 1984	5,200
Total	340,000

Question. Given the continuing problems with this round should production of funded programs be stopped until firm corrective action is taken?

Answer. It would not be in the best interest of the Army to stop the production of the funded programs. The M456A2 currently being produced defeats the required armor plate and—when compared to the M456A1—provides a significant improvement in the functioning and penetration against non-conventional armor and a substantial improvement in graze functioning.

Question. When will the replacement round for this problem-ridden round be ready for production?

Answer. The replacement round (Cartridge 105mm: HEAT-MP-T, XM815) is scheduled for type classification in late fiscal year 1985 with fiscal year 1986 currently planned as the first production buy.

TARGET PRACTICE ROUND

Question. About 115,000 M456 rounds will eventually be converted to M490 cartridges. Have these rounds been considered in determining the fiscal year 1983 request? Are only a portion of the 282,000 requested cartridges needed?

Answer. The 114,297 M456 rounds being converted to M490 cartridges consist of 105,852 for Army and 8,445 for the Marine Corps. These assets were considered in developing the fiscal year 1983 budget request. Actual deliveries were 91,958 from May 1981 through June 1982. Planned deliveries are 22,339 for July 1982 through October 1982. The fiscal year 1983 request for 282,000 is needed to support annual training requirements and to maintain the 90-day depot training level of 59,000.

30MM AMMUNITION FOR THE AH-64 ATTACK HELICOPTER

Question. The budget includes $64.1 million for the procurement of 30mm ammunition for the chain gun used on the AH-64 Apache helicopter. Included in this request is $55.1 million for 1,374,000 high explosive dual purpose cartridges. Initial procurement funding of $12 million was provided for this cartridge in fiscal year 1982. During development this round experienced inbore detonations and other technical problems. Last year you said that testing would be completed in September 1981 and type classification of the round would be in December 1981.

Why does the P-1 show that this is still Code B (not approved for service use)?

Answer. The P-1 dated October 8, 1981 accurately reflects Code B (not approved for service use) since type classification did not

occur until March 26, 1982. At this time the High Explosive Dual Purpose (HEDP) and Target Practice (TP) rounds were type classified standard, logistical control Code A.

Question. When will approval for service be achieved?

Answer. The type classification action on March 26, 1982 approved the 30mm High Explosive Dual Purpose (HEDP) and Target Practice (TP) rounds for service use.

Question. Did the most recent testing show a recurrence of any of the previous technical problems? If so, please explain.

Answer. Previously the round experienced inbore detonations and other technical problems that delayed the program by approximately 18 months. During Development Testing II approximately 9,000 rounds were fired without recurrence of the previously experienced problems. This successful testing led to type classification action on March 26, 1982.

Question. We were informed last year that the $12 million in fiscal year 1982 was to procure 225,000 projectiles. Why do you now expect to be able to procure 192,000?

Answer. The fiscal year 1982 original procurement quantity of 225,000 projectiles was adjusted downward (192,000) to compensate for inflation and round configuration changes.

Question. What assurance do you have that there will not be a similar cost overrun in fiscal year 1983?

Answer. The fiscal year 1982 procurement is an introductory quantity designed to prove out the new line equipment and manufacturing process. Through this learning process we will minimize production problems which will benefit the fiscal year 1983 buy. The Army will make every attempt to negotiate a firm-fixed-price contract. This procurement strategy would preclude cost overruns in fiscal year 1983.

Question. Last year we were told that the production lead time was 14 months and that fiscal year 1982 deliveries would take place between December 1982 and June 1983. What is your current estimate of the production lead time and delivery period and what has caused the change?

Answer. The fiscal year 1982 initial procurement lead time has increased from a previously stated 14 months (estimated for planning purposes) to a more realistic 17 months. The fiscal year 1983 reorder time is 12 months versus 9 months. This increase in fiscal year 1983 can be attributed to transitioning from a low rate prove-out quantity to a full inventory production schedule. Such a transition cycle requires time to establish raw material suppliers capable of making timely deliveries and the requirement to perform tooling changes to the production line after prove-out. The fiscal year 1982 procurement contract for 192,000 rounds will be awarded in the August-September 1982 timeframe with deliveries occurring September 1983 through February 1984. The fiscal year 1983 procurement will be awarded in February 1983 with deliveries from February 1984 through September 1984.

Question. The fiscal year 1982 contract will not be awarded until August 1982, one month before the beginning of fiscal year 1983. Why is the contract being awarded so late in the fiscal year?

Answer. The fiscal year 1982 30mm contract could not be awarded prior to August-September 1982 timeframe for the following rea-

sons: Type classification of the rounds did not occur until March 26, 1982. Release of request for proposal (RFP) and response from Honeywell Corp. was required prior to final contract negotiations and award.

Question. Since this is a new round, the production line still needs to be proven-out, and the fiscal year 1982 production contract is to be awarded late, why would it not be possible to stretch out the fiscal year 1982 procurement, be sure the line is proven out, and then have the first follow-on procurement in the fiscal year 1984?

Answer. The purpose of the fiscal year 1982 buy is to prove out the initial production facility (IPF) line and to prove out production tooling and processes on those items not previously made on production tooling, i.e., liner low voltage primer, detonator, and improved fuze. Delay of full-scale production until fiscal year 1984 is not recommended. The current fiscal year 1982 and fiscal year 1983 procurement buy profiles are structured so as to maintain a balanced program while retaining a hot base with continuous production and the opportunity to prove out an initial production facility prior to full-scale production. Any disruption of the fiscal year 1983 procurement buy creates an imbalance to the program and a threat to timely training of the troops. If the initial production facility is allowed to go cold prior to scheduled production, lay-away and start-up costs of the line equipment will increase the cost significantly. In addition, the prime and piece part vendors will be unable to retain their highly skilled production base. Once this skill base is dispersed to other ongoing operations, their return to a re-established program cannot be assured. Consequently, vendors are required to recruit from the available work force and acquaint it to the unique process through retraining programs which can and usually do prove costly and time consuming.

105MM DISCARDING SABOT TARGET PRACTICE ROUND

Question. Included in the budget for 105mm APFSDS tank rounds is $85.5 million for procurement of 397,000 training rounds. The GAO has questioned the need for all of this funding because of significantly higher training loss projections, large undelivered prior years orders, and the anticipated introduction of a replacement round.

Between 1977 and 1981 the training consumption of this round has varied between 136,000 and 239,000 per year. Why do your projections for fiscal year 1984 (the fiscal year 1983 funded delivery period) go to 631,000?

Answer. Prior year training losses have been constrained by TOA limitations throughout the entire ammunition account. This is one of the highest training priorities in the Army and requested procurement in addition to on-hand assets is required to meet this training need. The training loss projection for fiscal year 1984 has been revised to 455,000.

Question. What evidence or data do you have to support your fiscal year 1984 consumption estimate?

Answer. The revised fiscal year 1984 consumption estimate is a required amount based on readiness levels, changed force structures and annual firing requirements for tank crews.

Question. Why does it go back down to about 300,000 in the years after fiscal year 1984?

Answer. Training losses in fiscal year 1984 and after will be adjusted as indicated in previously (approximately 455,000).

Question. What is the current inventory and how much is on order from fiscal year 1982 and prior years?

Answer. On hand assets = 35,871; undelivered fiscal year 1981 and prior = 69,000; fiscal year 1982 contract = 390,000.

Question. The type classification date of the XM797 replacement round has slipped considerably due to engineering problems. Please discuss the status of resolving the problem and its possible impact on future programs.

Answer. A key design feature of the XM797 105mm Target Practice Fin Stabilized Discarding Sabot-Tracer (TPFSDS-T) round is breaking up of the flight projectile at reduced ranges so as to significantly reduce the impact danger areas and thus permit use at range-limited areas. The original break-up mechanism concept proved insufficiently reliable. The program has been restructured and an alternative break-up mechanism designed and tested with 100% success to date. The program is currently awaiting reentry into advance development pending availability of funding for that purpose. A 105mm version of the German-designed "Perforated Tail Cone Assembly" training round is also being examined for possible satisfaction of this requirement. The XM797 is currently scheduled for type classification in late fiscal year 1984. Thus the Army plans to continue to procure the earlier M724 round at least through the fiscal year 1984 buy.

Question. The Army is not planning to request any M724 rounds after fiscal year 1985. However, the projectile metal parts supplier wants to increase capacity by about 40 percent. Will additional equipment be provided to the supplier to increase capacity? If so, why?

Answer. There are no Army plans to expand existing capabilities at Flinchbaugh Products, Inc. (FPI), which is the sole-source producer of metal parts for the M724. As a result of facility project 5813184 the heat treat system at FPI is being replaced. While this would allow a higher through-put of M724 metal parts for this process step only, the prime purpose was modernization of the heat treat process for all FPI metal parts; i.e. M549, M650, etc.

Marine Corps Ammunition Procurement Budget

Question. The Marine Corps ammunition procurement budget shows dramatic increases in fluctuations over the four year period from fiscal year 1981 to fiscal year 1984. The actual and anticipated totals are as follows:

Fiscal year 1981: $81.6 million.
Fiscal year 1982: $314.5 million.
Fiscal year 1983: $630.2 million.
Fiscal year 1984: $345.1 million.

We understand that there was a last minute $290 million "plus up" to the Marine Corps budget in fiscal year 1983 by OSD. What was the reason for this?

Answer. Actually there were two "plus ups" to the Marine Corps fiscal year 1983 ammunition budget. In December, 1981, the Marine Corps received $140 million. Another $150.1 million was received in January, 1982. The austerity of the fiscal year 1979, 1980 and 1981 Procurement, Marine Corps (PMC) budgets did not allow the Marine Corps to improve its munitions sustainability. The fiscal year 1979, 1980 and 1981 PMC budgets were $356, $277 and $506 million respectively. Of this total, $68, $73 and $80 million were allocated for procurement of munitions. During this same time frame the annual training requirement for ammunition was $100-$120 million. To accommodate training the Marine Corps consumed Prepositioned War Reserve (PWR) assets. The fiscal year 1982 budget request was a turning point in munition procurement. In addition to increasing the training allocation, the Marine Corps began to improve the level of PWR munitions. The fiscal year 1983 budget request continues the positive trend set in fiscal year 1982. The Marine Corps ammunition request is based on total obligation authority (TOA) levels. The TOA is established in the Marine Corps to develop a balanced procurement budget. The original fiscal year 1983 request was $344 million. TOA was added as a result of additional funding by OSD. The Marine Corps decided to apply the additional TOA to ammunition to decrease our deficiency and increase our sustainability.

Question. For the record, show the specific line items and amounts to which this increase was applied.

Answer. The following is provided:

[In thousands of dollars]

Line item No.	Initial submit	Plus up	President's budget
18 Smk Screening	$2,263	$13,100	$15,363
19 155mm ICM	39,114	92,600	131,714
20 155mm Chg Prop D533	7,529	6,500	14,029
20 155mm Chg Prop D541	17,535	9,500	27,035
21 155mm HE	8,496	37,700	46,193
28 25mm HEI-T	6,713	4,800	11,513
30 SMAW 81mm Rkt	2,330	2,200	4,530
33 8 in Chg Prop	1,796	2,800	4,596
40 155mm ADAM	17,076	40,100	57,176
41 155mm RAAMS	13,562	23,600	37,162
42 8 in ICM	20,260	33,100	53,360
43 155mm COPPERHEAD	14,384	6,500	20,884
45 FUZE MT	2,033	17,600	19,633

Question. One of the initiatives of the current administration is level production programs. How do you justify the doubling of the funding level in fiscal year 1983 and then a return to the prior level in fiscal year 1984?

Answer. The original fiscal year 1983 ammunition program was $344 million. When the two separate outlays were provided to the Marine Corps by OSD, the decision was made to increase the am-

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munition budget to decrease deficiencies and increase sustainability. The fiscal year 1984 and other outyears remained unchanged because no funds were designated for those years.

Question. What impact does this fluctuation have on the ammunition industrial base?

Answer. The Marine Corps' fiscal year 1983 ammunition program has little or no impact on the overall ammunition industrial base. In fact, some of our increased buys will allow production lines to continue operation. In the small number of cases where the industrial base's minimum sustaining rate or a 1-8-5 rate would be exceeded, compensation has been made by the Army to accommodate the Marine Corps' fiscal year 1983 program, realizing that the fiscal year 1984 program will probably return to normal. The fiscal year 1983 program is producible and liaison was conducted with the Army prior to applying any additional funds to the ammunition lines.

Navy 5"/54 Ship Gun Ammunition

Question. Included in the $28.0 million in the budget for 5"/54 components for Navy ship gun ammunition is $10.2 million for procurement of 9400 Improved MK 82 High Explosive Point Detonating rounds. The first procurement of this improved round, called HIFRAG, was in fiscal year 1981 when 10,000 rounds were funded. The Navy budgeted $6.2 million in fiscal year 1982 for procurement of 9,984 HIFRAG rounds but because of delivery delays bought 29,088 conventional rounds instead. What are the main differences between the HIFRAG and the conventional round?

Answer. The conventional round is a one-piece steel body press loaded with composition A-3 high explosive, whereas HIFRAG is a two piece high fragmentation steel body loaded with a pre-cast container (Beaker) of a plastic bonded high explosive (PBXN-106). The main operational difference is a safer and more effective projectile.

Question. What are the estimated unit costs in fiscal year 1983 of each round?

Answer. Because of the cancellation of the fiscal year 1983 HIFRAG program, the Single Manager for Conventional Ammunition did not provide a fiscal year 1983 estimated cost for the HIFRAG point detonating (PD) round. The conventional PD round estimated cost is $320 each.

Question. When will HIFRAG be approved for service use?

Answer. Estimated approval for service use for HIFRAG is October 1982.

Question. Under what circumstances would the Navy change its plans and procure conventional rounds again in fiscal year 1983?

Answer. Navy does not intend to procure HIFRAG rounds in fiscal year 1983 because of technical problems being experienced with the current low rate initial production. The Navy is refining the quantity of conventional 5"/54 rounds for fiscal year 1983 procurement.

Question. How many conventional rounds could be procured for $10.2 million?

Answer. $10.2m would procure 31,875 conventional rounds at $320 each.

Question. What would it cost to procure 9,400 conventional rounds?

Answer. Procurement of 9,400 conventional rounds at $320 each would require $3,008,000.

Question. What cost-benefit analysis has the Navy done to justify the high cost of the HIFRAG versus the conventional round?

Answer. The primary rationale for the HIFRAG round is its increased safety with the plastic bonded explosive virtually eliminating the prospect of a recurrence of our catastrophic in-bore explosion problem. The use of HIFRAG steel has yielded sharply increased effectiveness across the spectrum of the amphibious scenario target set.

Cost-benefit analysis relative to these benefits versus the increased cost cannot be completed until the LRIP efforts yield a valid unit price for HIFRAG. Effectiveness analysis has been conducted in some detail. LRIP costs include initial tooling etc. 25 percent of metal parts cost.

Air Force FMU-139 Fuze

Question. Last year, for the second year in a row, Congress denied Air Force procurement funding for the FMU-112 bomb fuze in the belief that the Air Force should buy the competitively procured, jointly developed FMU-139 fuze when it is ready. The fiscal year 1983 Air Force budget includes $8.3 million for "FMU-112/139." We were told earlier this year that the Air Force would buy the FMU-139 fuze if it was ready but that there was some uncertainty because the Navy had not budgeted procurement in fiscal year 1983.

Last year, you expected to make a low rate initial production decision on the FMU-139 in May 1983 (mid-fiscal year 1983) with approval for service use in August 1983.

What are the current milestones for the FMU-139?

Answer. The low rate initial production decision is currently scheduled for October 1983 (fiscal year 1984) and approval for service use for September 1983.

Question. If they are different from the above, please explain.

Answer. The May 1983 date for low rate initial production was based on the assumption that a "request for production in advance of approval for service use" would be approved. That request was denied because of a lack of operational testing to support the request. Fiscal year 1983 production funds were subsequently deleted from the Navy budget. The program has since been restructured to accomplish an initial operational assessment (OT-IIA) during September-November 1982. The results of this test could be used to support a low-rate initial production decision and exercise the production option of the development contract if fiscal year 1983 funds were available. If this test is favorable, funds required to support Low Rate Initial Production would be approximatly $10.0M.

Question. Last July Dr. DeLauer wrote us that the Navy would be requesting initial procurement funding of $17 million for the FMU-139 in fiscal year 1983. Why has the Navy decided not to procure the FMU-139 in fiscal year 1983?

Answer. Fiscal year 1983 funds for the low rate initial production were withdrawn from the Navy budget after a "request for production in advance of approval for service use" was denied because of the lack of operational testing to support the request. The FMU-139/B test program has been restructured to provide an early OPTEVFOR assessment (OT-IIA) of the fuze to support a request for waiver for fiscal year 1984 OP, N funds.

Question. We have seen in the past that the Air Force has failed to provide timely funding for the FMU-139 development program. Is the FMU-139 development program fully funded by both the Navy and the Air Force in fiscal year 1983?

Answer. The Air Force has provided its share of funding each fiscal year as well as an additional $96,000 to fund its share of a cost overrun. The program is fully funded by both the Navy and Air Force in fiscal year 1983.

Question. Have there been any further delays in securing necessary funding for the FMU-139?

Answer. No, there have been no delays in obtaining the required R.D.T. & E. funding.

Question. Earlier testimony has stated that the FMU-139 will be about $300 less than the FMU-112. Is this estimate still correct?

Answer. The production option for 10,000 fuzes in the current contract was negotiated for a unit cost target price of $679. The ceiling price allows this to go to $808. Design changes initiated since last year's testimony are expected to drive the price to the ceiling, but a $250 to $300 difference in FMU-112 and FMU-139 cost is still anticipated. The Navy is in the process of accomplishing a life cycle cost study of the FMU-139 and will revise the unit cost estimate, if appropriate, when the study is completed.

Question. What are the differences between the Air Force and the Navy version of the FMU-139 and how will this affect cost?

Answer. There are no differences in the fuze itself for Air Force or Navy use. The differences are in other systems/subsystems associated with each Service's peculiar delivery/aircraft and operational concept. For example: in the Navy application the fuze arming and delay times are cockpit selectable and power to the fuze is provided by the aircraft fuze function control set at bomb release. For the Air Force application the times are ground selectable and the fuze is powered by an air driven turbine (FZU-37) which stays with the bomb at release.

Question. The first and only procurement of the FMU-112 fuze was funded in fiscal year 1980. When were these 2500 fuzes delivered? What were the results of first article acceptance tests?

Answer. The contract for these fuzes was awarded in Mar 81. The first 514 fuzes were delivered in Mar-Apr 82 for First Article Acceptance Tests (FAAT). The remaining 1986 fuzes will be delivered Dec 82-Apr 83. The FAAT is approximately 63 percent complete and scheduled for completion in Aug/Sep 82. To date, the reliability is excellent (only 7 failures in 230 valid tests).

Question. What procurement strategy will be followed with the FMU-139 and what type contract will be used?

Answer. The current development contract, which was awarded on a competitive basis, contains an option for 10,000 fuzes. This option will be exercised on a fixed price, incentive basis. The first

year of follow-on production is planned for a sole source award to Motorola on a firm fixed price basis. The second year of follow-on production (third year of production) is to be a split production with a portion to Motorola on a firm fixed price basis and a portion to a second source to be competitively awarded on a fixed price incentive basis. The fourth year of production will be completed between Motorola and the second source for multi-year procurement on a firm fixed price basis.

Question. If the Air Force buys the FMU-112 fuze in fiscal year 1983, what kind of contract and procurement strategy will be used? How does the estimated 10,000 quantity compare to the minimum sustaining rate and the economic production rate for the FMU-112?

Answer. The Army Single Manager for Conventional Ammunition will select the most appropriate procurement strategy. A small quantity, i.e. 10,000 fuzes, is likely to be sole source to the developing contractor, Delco Electronics. A larger quantity, i.e. 30,000, would permit competition. The FMU-112 minimum sustaining rate is 10,000 fuzes. The economic production rate is 100,000 fuzes.

Question. If the FMU-112 can be completed and if the price looks lower than the FMU-139, would it make sense to cancel the FMU-139 and have the Navy and Air Force buy the FMU-112? Please explain.

Answer. No. The FMU-112 is not compatible with the Navy aircraft fuze function control sets and is therefore unacceptable for Navy use.

Air Force CBU-90 Antiarmor Cluster Munition (ACM)

Question. The Air Force budget includes $54.4 million for the procurement of 2,000 Antiarmor Cluster Munition (ACM) weapons. In addition, $12.6 million is included in the Army budget for metal parts production facilities for this weapon. The ACM is an air delivered anti-tank munition. It consists of a tactical munitions dispenser (TMD) loaded with 48 submunitions which expel self-forging-fragments sufficient to penetrate thick armor plate.

Last March, the Committee learned from GAO that the Air Force was considering cancellation of the ACM program, and that a stop-work order had been given to the development contractor. We were later told by the Air Force that an internal review was being made of the program because of a projected decrease in system performace.

What were the specific performace shortfalls about which the Air Force was concerned?

Answer. The primary concern is a reduction in the number of armor kills per pass due to a revised target description of Soviet armor.

Question. What other technical problems has the Air Force experienced with this program?

Answer. Other technical problems identified during testing included mutual blast interference among neighboring submunitions and lower than expected reliability due to the dispenser opening event.

Question. What is the current estimate of total program cost, and how does this compare with prior estimates?

Answer. The ACM program has been restructured to permit more development testing and analysis of the system prior to a production decision. This additional testing and revised schedule will increase the development cost slightly. Although final estimates are incomplete, we expect total program development costs to increase approximately $1.5 million.

The total development cost of the ACM system including validation cost is $59.1 million without the projected $1.5 million increase. The total procurement costs based on procurement of the inventory objective is $1.9 billion, which remains unchanged from the fiscal year 1983 President's budget.

Question. What were the results of the Air Force review of this program?

Answer. The Air Force concluded that the existing test data base is insufficient to determine if ACM's effectiveness against armor threats warrants continuation of development and production. The Air Force has lifted the stop-work order and directed further tests be conducted prior to a program decision in the fall of 1982.

Question. When was development work re-started?

Answer. The stop-work order was lifted and development work re-started in May, 1982.

Question. What are the current milestones for the ACM program?

Answer. We are working toward the following near-term milestones:

Additional Tests Complete, October 1982.

Program Continuation/Termination Decision, October 1982.

Critical Design Review, January/February 1983.

Question. What is the status of all production facilities required to make ACM in initial quantities and in full-scale production quantities? When is each facility funded, begun, and completed?

Answer. Production facilities for the ACM submunition and the Tactical Munitions Dispenser are located at a contractor leased facility in New Brighton, Minnesota. The final load/assemble/pack (LAP) of the ACM will be performed at the Kansas Army Ammunition Plant, Parsons, Kansas.

The production facilities at New Brighton are to be funded in fiscal year 1983 with a tentative start date of June, 1983. The facility project will be completed in approximately 18 months from the start date.

The LAP facilities project at Kansas started in June, 1982, with fiscal year 1982 funding and will be completed in approximately 33 months.

Question. What is the current funding profile for ACM? Show procurement and R&D costs as well as quantities.

Answer. The funding profile for ACM as reflected in the fiscal year 1983 President's Budget is as follows:

	Fiscal year				
	1983	1984	1985	1986	1987
RDT&E	8.5				
Procurement	54.4	164.0	403.0	366.6	473.8
Quantity	2000	7200	20000	20000	24400

The RDT&E costs do not reflect the anticipated $1.5 million increase in development costs due to additional testing. Also, the procurement line does not reflect the impact of the reduction of fiscal year 1982 long lead item funding pending additional testing/production decision.

Question. What is the delivery schedule for the projected fiscal year 1983 and fiscal year 1984 procurements?

Answer. Assuming fiscal year 1983 program release, delivery of ACM units will occur 28 months after contract award. The delivery schedule for the first twelve-month delivery period begins at 20 units per month building up to 325 units per month by the eleventh delivery month. This rate doubles to 700 units within the second production year.

Question. What other air-delivered antiarmor weapons are currently in development, and what are the milestones for each?

Answer. Other air-delivered antiarmor weapons currently in development include:

IIR Maverick (an air-to-surface missile with imaging infrared sensor): AFSARC—August 1982; OSD Review—September 1982.

Wasp (a radar guided fire and forget missile): FSD start—fiscal year 1984; DT&E/IOT&E start—fiscal year 1986.

ERAM (an air-delivered mine using sensors to provide a standoff kill capability): FSD start—fiscal year 1984.

SFW (sensor fuzed weapon): FSD start—fiscal year 1984.

Air Force Laser Guided Bomb Kits

Question. The Air Force budget includes $176.4 million for laser guided bomb kits. This amount includes $69.9 million for 8,000 LGB II's and $106.5 million for 2,000 Low Level Laser Guided Bomb Kits (LLLGB).

The LLLGB has been developed to replace the LGB–II and it is a much better weapon. The present inventory of the LGB–II (including due-ins) comprises a significant part of the requirements for LGB's. Why are funds being requested to procure 8,000 more LGB–IIs?

Answer. The LGB–IIs remain a valuable addition to the inventory and are being procured for use in training. The fiscal year 1983 buy is planned to be the final procurement of LGB–II and the total LGB–II final inventory is based on wartime planning. Current wartime plans call for use of LGB–II where that weapon will be as effective as LLLGB and its lower procurement cost makes it the preferred weapon. Eliminating the fiscal year 1983 LGB–II procurement will require increasing out year LLLGB procurements to meet overall inventory objectives at significantly increased costs.

Realities of schedule and tooling make LLLGBs first production year a small one—2,000 units, with the first weapon delivered in

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September 1983. LGB-IIs will be produced in reduced quantity to avoid a production break and to keep skilled workers on line. Cutting back the LGB-II production would avoid some costs, but unit cost for LLLGBs would rise as indirect costs and overhead would be reallocated.

Question. What has been the inventory objective for Laser Guided Bomb kits in each year from fiscal year 1979 to fiscal year 1983?

Answer. The Air Force inventory objective for laser guided bomb kits has been: ———.

Question. What will be the total number of LGB-I and LGB-II kits at the end of the fiscal year 1982 and fiscal year 1983 funded delivery periods?

Answer. Fiscal year 1982—70,038. Fiscal year 1983—78,606.

Question. Both LGB-II's and LLLGB's are produced by Texas Instruments. If no LGB-II's are funded in fiscal year 1983, would the contractor have capacity to produce more LLLGB's? How many more? Would additional funding for LLLGB's result in more being produced than desirable considering that fiscal year 1983 is initial production?

Answer. If no LGB-IIs were funded in fiscal year 1983, Texas Instruments could produce about 1,000 more LLLBG's. The limiting factor is not the LGB-II production quantity, but the nature of initial production start-up. Additional funds for LLLGB's could raise the LLLGB quantity, but unit cost would rise if the LGB-IIs were not bought.

Question. The request for LLLGB kits includes 20 percent for MK-84 bombs with the balance for MK-82 bombs. The contractor option is for 25 percent for MK-84 bombs and 75 percent for MK-82 bombs. Is this the desired ratio? How does it compare with the mix of the bombs in the inventory and planned for out year buys?

Answer. The desired ratio for the total LLLGB kit inventory is 55 percent MK-82 and 45 percent MK-84. Although the inventory of warheads is 93 percent MK-82s to 7 percent MK-84s, the quantity of both types is large enough to accommodate the LLLGB mix. Out year buys will be adjusted to reach the desired overall mix of LLLGB kit types.

Question. A "fly-off" between LLLB and the Navy's Skipper laser guided bomb was directed. Has it been accomplished and what were the results?

Answer. The LLLGB/Skipper II demo was conducted in March 1982. Two LLLGBs and two Skipper IIs were launched. The Navy acknowledged that Skipper II would fail if launched under the planned demo conditions, which represent the Air Force land attack mission. The Skipper II release conditions were relaxed to accommodate the Skipper II launch envelope. Both LLLGBs hit well within the accuracy required for the land attack mission. Both Skipper IIs missed the target. While Skipper II may prove an excellent weapon for Naval applications, the Air Force remains convinced that Skipper II cannot do the Air Force job.

Question. The use of Skipper instead of LLLGB by the Air Force would require modification of the airfoils for both MK-82 and MK-84. Considering that requirement, and the cost of LGB-II to be retrofitted, would Skipper be cheaper than LLLGB?

Answer. The airfoil modification is one of many modifications and accommodations the Air Force would have to make to use Skipper II. Extensive cost analysis was done by a joint Air Force and Navy team in May 1981. After reviewing the analysis, OUSDRE/TW(AW) concluded that the weapons were of comparable cost.

SEPARATE BUDGETING FOR TRAINING AMMUNITION

Question. The report of the Senate Armed Services Committee on the fiscal year 1983 authorization bill directed the Army to identify training only ammunition in a new separate budget sub-activity beginning in fiscal year 1984. What problems, if any, does this create for the Army?

Answer. The establishment of a new sub-activity will require additional coding of the data base. It will create a problem for those items used for both war reserve and training. These items would be identified in two different sub-activities within the procurement program. The Army does not support the establishment of a separate sub-activity. The Army currently has reports available that identify all items procured for training by fiscal year showing both quantity and dollars. The Army now has full visibility of training items, and the additional stratification by sub-activity will not provide any greater detail than what is now available.

Question. Should the same guidance also apply to the other services?

Answer. Since the establishment of a new sub-activity requires additional data base coding and creates problems for those items used for both war reserves and training and the visibility of training items is readily available upon request, this guidance should not apply to the Army nor the other services.

PACKAGING FOR SMALL ARMS TRAINING AMMUNITION

Question. On August 18, 1981, the General Accounting Office issued a report (PLRD 81-53) titled "DoD Can Save Millions by Using Less Expensive Packaging for Small Arms Training Ammunition". The report concluded that an estimated $33 million would be saved in fiscal years 1982-1986 by buying training ammunition packaged in less expensive containers and without items not used in training. According to the report, DoD officials agreed with the conclusions and recommendations of the draft report. In a later formal response to the final report, however, Acting Under Secretary James P. Wade stated that DoD only partially concurred with the two recommendations.

Why was the DoD position changed?

Answer. General Accounting Office report, page iii, *Agency Comments,* states: "GAO discussed a draft of this report with DoD officials, and they agreed with the conclusions and recommendations." After reassessing the situation the Under Secretary of Defense (Research and Engineering) stated in a 15 October 1981 letter to the General Accounting Office: (a) Concur in use of training pack for blank ammunition. (b) Must study impact on readiness of "training pack" use for live ammo. (c) Ammo in at-sea environment requires level A packaging to protect against adverse water and salt spray.

(d) Costs to implement need to be addressed. (e) Navy "First in—first out" issue policy accomplishes surveillance testing of Prepositioned War Reserve Material Stocks (PWRMS); separate packaging for training ammo would necessitate implementation of a separate surveillance program for PWRMS. (f) Non-fire-resistant containers are counter to Navy efforts to reduce fire risks on ships.

Question. Does the Office of the Secretary of Defense still agree that blank training ammunition can be procured by all services using the less costly packaging?

Answer. Yes, there is general agreement that it is feasible to use the fiberboard pack for blank ammunition. However, the real cost savings are anticipated to be minimal once expenses to implement are considered.

Question. Given that GAO has already made a thorough study of this matter, why is a further study now being proposed on the feasibility of less expensive packaging for live ammunition?

Answer. The GAO study was incomplete in that it did not address the costs associated with implementing the recommendations. (a) The projected cost savings of $33 million were grossly overstated; Army estimates net savings less than $1 million in fiscal years 1983-87.

This figure takes into account expenses associated with design, test, unitization, outloading, etc. Other costs not addressed include the entire logistics chain (separate identification in catalogs, manuals, storage, issue and procurement), or cost to repack unused quantities once the fiberboard container has been opened. These costs could outweigh expected savings. In addition, the readiness impact was inaccurately assessed. For example: the General Accounting Office states Army can simply upgrade packaging during mobilization; this is a dangerous claim. Shortages of manpower and materiel and competing priorities for limited resources may result in ammunition not suitably packaged for shipment to users. (b) The metal containers are also used for 50 caliber ammunition, artillery and rocket fuzes and approximately 50 other items. Peacetime production base must be maintained through peacetime requirements (minimum sustaining rate is 120 thousand per month).

Question. What is the timeframe for this study?

Answer. The study has been completed and recommendations are being finalized.

Question. How much will this study cost?

Answer. The study was accomplished within existing resources.

Question. GAO estimates that a reduction of $1.8 million can be made in the Army's FY 1983 procurement of 5.56mm and 7.62mm blank ammunition as a result of this change. Do you agree with this estimate? If not, why not?

Answer. No. The General Accounting Office assessment of cost savings did not account for expenses associated with implementation. Estimated Fiscal Year 1983 cost savings are $34,650.00.

Question. What reductions can be made in the FY 83 ammunition procurement budgets of the other services as a result of this change? Please identify P-1 line numbers.

Answer. Other service FY 83 buys for both 5.56mm and 7.62mm blank ammunition total 40,593 rounds. Net savings if fiberboard containers are used are estimated at $111.00, assuming all fixed ex-

penses (i.e., technical manuals, test, design, management, etc.) are absorbed by Army and are already used to compute estimated savings of $34,650.00 for Army buys.

[CLERK'S NOTE.—End of questions submitted by Mr. Chappell.]

Mr. CHAPPELL. Thank you, gentlemen, for being with us.

The committee stands adjourned until the call of the Chair.

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TUESDAY, JULY 27, 1982.

MULTIYEAR PROCUREMENT

GENERAL ACCOUNTING OFFICE WITNESSES

ROBERT GILROY, SENIOR ASSOCIATE DIRECTOR

JOHN HENDERSON, DEPUTY ASSOCIATE DIRECTOR, PROCUREMENT, LOGISTICS AND READINESS DIVISION

PAUL ROBERTS, SENIOR ECONOMIST, PROGRAM ANALYSIS DIVISION

INTRODUCTION

Mr. ADDABBO. The committee will come to order.

At this time the committee will receive testimony on Multiyear Procurement.

Today's hearing will focus on the General Accounting Office's analysis of DOD's proposed projects for multiyear procurement.

Today we have with us Mr. Robert Gilroy, Senior Associate Director of the Procurement and Logistics, Readiness Division. Mr. Gilroy, as you know, I requested that this review be made primarily because the Department of Defense has requested funds to initiate twelve new multiyear programs, which is a significant increase over last year's request.

In past testimony GAO representatives have stated that multiyear contracting may be a viable procurement strategy, but you advised that a slow cautious approach be taken when dealing with multiyear procurement of total weapons systems. I agreed with your assessment last year. However, this year's request for twelve systems may be moving faster than we should be.

Since this is the first time you have appeared before the committee as a primary witness, your biography will be made part of the record.

[The biography follows:]

Robert M. Gilroy is a Senior Associate Director of the Procurement, Logistics, and Readiness Division of the General Accounting Office. Mr. Gilroy joined the GAO in 1957 upon graduation from the University of Scranton. He served in GAO's Philadelphia Regional Office from 1957 to 1963 and in the International Division's Branch Office in Frankfurt, Germany from 1963 to 1969. On return from his overseas assignment, Mr. Gilroy was assigned to GAO Headquarters in Washington, D.C. At Headquarters, he has been provided increased responsibility for various GAO review efforts including country-wide and world-wide Defense oriented reviews. He has also served as the GAO focal point for all information management reviews performed by GAO. Prior to assuming his current duties, Mr. Gilroy was Director of GAO's Office of Internal Review and responsible directly to the Comptroller General for oversight of all operations of the GAO. Mr. Gilroy holds a Bachelor of Science Degree in Accounting from the University of Scranton and a Masters Degree in International Affairs from George Washington University. He is also a graduate of the Department of Defense's National War College.

Mr. Gilroy is the son of Mary Gilroy and the late Francis J. Gilroy of Carbondale, Pennsylvania. He is married to the former Julie E. Devine of Carbondale and they

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have five children, Tersea, Patricia, Robert F., Charles, and Marianne Gilroy Culbertson. The Gilroys reside in Silver Spring, Maryland.

Mr. ADDABBO. In the interest of allowing sufficient time for discussion, I understand that you have a brief statement which will be made part of the record, and that you will also provide a brief overview of your analysis of the proposed multiyear projects.

You may proceed with your statement, Mr. Gilroy.

SUMMARY STATEMENT BY MR. GILROY

Mr. GILROY. Mr. Chairman, before I start, I would like to introduce my associates; Mr. John Henderson, Deputy Associate Director of our Program Logistics and Readiness Division who, among other duties, has the responsibility for reviews concerning multiyear contracts and on my left is Dr. Paul Roberts, a senior economist from our Program Analysis Division who also, among other duties, is one of our resident experts in cost/benefit analysis.

Mr. Chairman, members of the committee, I welcome this opportunity to discuss Department of Defense application of the multiyear contracting authority provided under Public Law 97-86. It is slightly over a year since we last appeared before this committee and testified in support of careful and prudent use of multiyear contracting for major system acquisition.

At that time we differentiated between multiyear contracts for supplies and services as opposed to major weapon systems.

We stated that major weapon programs require comprehensive and sophisticated planning by Defense and its prime contractors and between prime and subcontractors.

We cautioned that the attractiveness of higher potential benefits should not obscure significant risk factors such as changes in force structure, threat, technology, inflation and domestic priorities.

We remain convinced that multiyear contracting, where appropriate, offers substantial advantages over annual contracting. We continue to advise that a cautious approach should be taken in applying it to major weapon systems.

The criteria established in Public Law 97-86 to guide agency heads in selecting multiyear contract candidates, coupled with the reporting requirements and expanded criteria set forth in the 1982 Defense Appropriations Act and accompanying committee report, addressed our concerns. The prescribed justification materials and reporting requirements established are essential to permit an assessment of decisions made.

At your request, Mr. Chairman, we analyzed the Department of Defense proposed fiscal year 1983 weapon system multiyear candidates for compliance with the prescribed criteria.

Our report was submitted to you on April 29, 1982. We found that while the criteria are sufficiently broad to allow discretion and judgment in their application, there are some questions that need to be clarified before sound judgments can be made on proposed multiyear contract candidates for major weapon systems.

Is budgetary data sufficient for estimating savings resulting from multiyear contract use versus annual contracting or should estimated savings be based on firm contractor proposals on both bases?

Should final congressional approval be given for major weapon systems multiyear contracts only after review of proposals received from contractors with firm data available for estimating and comparing dollar savings, other benefits, and risks?

Should estimated savings be discounted as required by Office of Management and Budget Circular A-94? Since the two alternatives involve different rates of expenditures, estimates associated with each must reflect the additional money cost applicable to earlier expenditures.

Should escalation avoidance be considered as savings?

Will the amount of funding required for advance procurement of materials for future contract years unreasonably erode the full funding principle?

To what extent and under what criteria should enhancement to the industrial base be demonstrated?

In our view, a creditable estimate of savings to be achieved through multiyear contracting generally cannot be made without benefit of firm proposal data from contractors on both a multiyear and an annual basis.

Defense estimated savings for fiscal year 1983 were based primarily on budgetary data. Resolution of this problem most likely will require a two step process; authority to solicit proposals on both a multiyear and an annual contract basis, with the ultimate decision reserved until the firm proposals are analyzed.

The savings projected by Defense for the fiscal year 1983 candidate systems were not discounted to reflect the time value of money associated with the accelerated expenditure of funds incident to multiyear contracting.

In addition, escalation avoidance was considered as a multiyear contracting savings. Department computations of projected savings were inconsistent with the guidance set forth in the Office of Management and Budget Circular A-94.

Enclosure II to our April 29, 1982, report to you showed a significant reduction in projected savings for the nine major systems after applying the discounting factor and eliminating the amount of escalation avoidance.

There is a significant amount of procurement under the proposed multiyear contracts in advance of actual need. There doubtless is a point where the potential savings to be achieved through advance procurement would be outweighed by the risks associated with buying for needs too far into the future.

Several of the fiscal year 1983 multiyear contract candidate systems will have as much as 30 percent or more of the value of future year's end items funded through advance procurement. Under annual contracting for these same systems, advance procurement funding ranged from only 1.5 percent to 11.8 percent.

Enhancement of the industrial base was frequently advanced as justification for multiyear contracting. The House Committee on Appropriations directed that multiyear contracting justifications specifically address this issue.

In its fiscal year 1983 candidate justifications, the Department of Defense did not suggest any significant enhancement of facilities at the prime or first tier subcontractor levels and lower tier subcontractor levels and lower tier and supplier levels were not ad-

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dressed. There was no indication as to whether the department was attempting to sustain a mobilization base or add a surge capability.

This concludes my prepared statement. Mr. Chairman, we would now like to provide you and the committee members with a more graphic presentation on the principal issues in our analysis of the DOD proposed multiyear contract candidates.

[Chart.]

MULTIYEAR APPROVAL CRITERIA

Public Law 97-86

- **Benefit to the Government**
  - **National Security**
  - **Reduced Contract Costs**
- **Stability of Funding**
- **Stability of Requirement**
- **Stability of Design**
- **Degree of Cost Confidence**

MULTIYEAR APPROVAL CRITERIA

I don't know how visible these charts are to everybody in the room, but Public Law 97-86 made it pretty clear there were five criteria that ought to be adhered to before DOD would be allowed to go forward with multiyear contracting. These criteria are benefit to the government, and this breaks out to national security and reduced contract costs, and then we have stability of funding, stability of requirement, stability of design, and the degree of cost confidence.

[Chart.]

DOD'S COMPLIANCE WITH CRITERIA

- DOD's FY 83 Candidates generally meets criteria for
  - Benefit to Government-National Security
  - Stability of funding, requirements and design
- Exceptions
  - Funding
    - GAO found no indication that DOD has subjected candidates to any form of sensitivity analysis.
  - Requirements
    - MK46 torpedo has a history of significant quantity fluctuations.
      - Largest annual production 288 units
      - Proposed 3 year multiyear buy of 3,140 units
  - Design
    - NAVSTAR Global Positioning System
      - Qualification test vehicle has not yet been fully assembled and tested.

This chart shows DOD's compliance with the criteria. The charts show that the DOD candidates generally meet criteria for benefit to the government as it relates to national security but the subject of reduced contract costs is addressed under cost confidence. Defense said all of the twelve systems that have been proposed are critical to national security needs. We have no reason to doubt this in any way.

As far as stability of funding, requirements and design, we found for the most part the systems did meet these requirements with certain exceptions. Under funding, we found there was no indication that DOD had subjected candidates to any form of sensitivity analysis. By this we mean that DOD had not assured themselves that the candidates that were proposed were compared against other candidates (procurements) within the Department of Defense, and that the proposed MYC systems, in the case of some kind of budget crunch, were the candidates that DOD would want to survive the budget crunch.

When you go into multiyear contracting, you are taking a risk because if for some reason you cancel a program you stand to lose the savings that go along with a multiyear contract.

Under requirements, we found eleven of the twelve systems met the criteria. We observed, however, that the MK–46 torpedo, over the last 3 years, has a history of significant fluctuations.

For instance the largest annual production rate over the past 3 years was 288 units—we have recently been advised that the figure is 253 units. Anyway, somewhere between 250 and 300 units was the largest production run. Yet the current proposed buy is a 3-year multiyear buy of 3,140 units.

Last is design. Again eleven of the twelve systems appear to have a firm design. We have some doubt however on the NAVSTAR global positioning system mainly because the qualification test vehicle has not yet been fully assembled and tested.

However, we understand it is an evolutionary system and they do not anticipate that there will be any significant difficulty. Still you are not supposed to have any design risk involved if you are going to go multiyear. So it is brought up here as an exception.

[Chart.]

DEGREE OF COST CONFIDENCE

- GAO has no confidence DOD's estimated savings can be achieved
  - Savings based on "soft" data
    - Proposals have not been received or negotiated
    - DOD plans to solicit proposals only on multiyear basis
  - Estimated savings not "discounted"
    - DOD's estimated savings of $879.4million reduced to $185.8 after discounting
  - Completed contract method for Federal tax purposes
    - Use of multiyear contracts extends tax payment deferral period
    - Treasury is considering changes

DEGREE OF COST CONFIDENCE

Our main concern has been the degree of cost confidence. We say up front that GAO has no confidence that DOD's estimated cost savings can be achieved. We say this for a number of reasons. One is the data that has been submitted is what we call budgetary, judgmental, or soft data.

At this point, firm proposals for the systems have not been received or negotiated with contractors.

During our review we were informed that DOD planned to solicit proposals only on a multiyear basis. We have been recently informed that the DOD now intends, for certain systems, to ask for quotes on both annual and multiyear buy bases. This is the way we believe they should go on all of the twelve systems. In order to have a base to measure savings there should be a quote on the cost for both annual and multiyear buys.

DOD SAVINGS NOT DISCOUNTED

The big item here, as you will see in another chart, is that the estimated savings are not discounted. We find that DOD's estimated savings of $879.4 million when discounting is applied are reduced to $185.8 million.

Any time you are going to spend, as you do in annual versus multiyear, varying amounts of money at points in time i.e. in annual, you have a much steadier flow of funds where in multiyear, in order to realize savings your up front expenditures are usually greater. In order to have some kind of measurement, you have to come back to a present value for a point of measurement between annual and multiyear contracting.

We have discounted the DOD savings and we have a chart that we will go into and show you what effect discounting has on these systems.

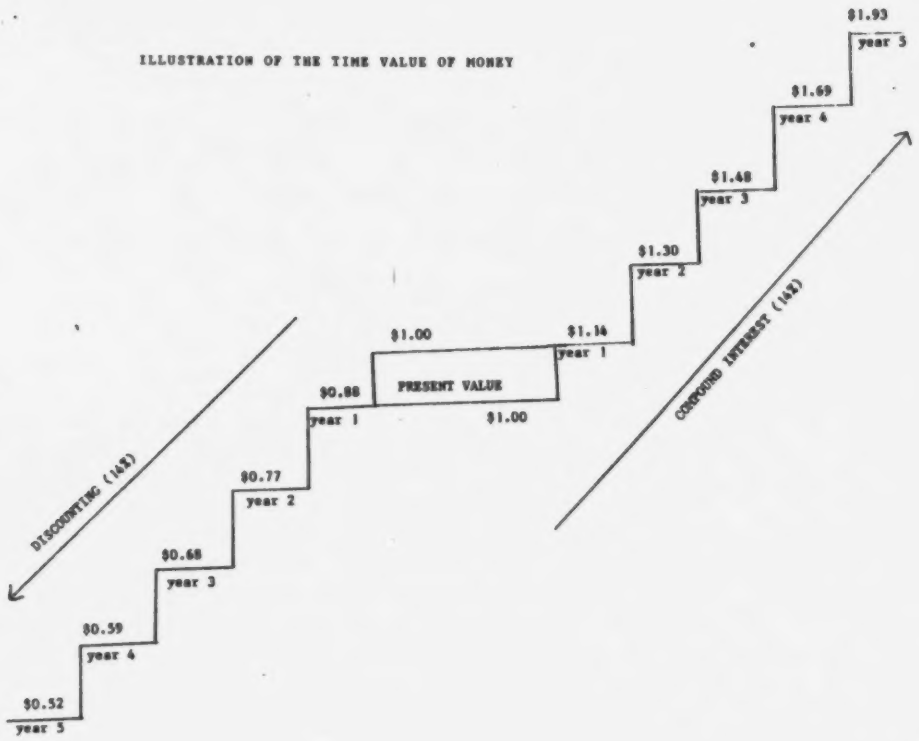
Mr. EDWARDS. Before you leave that, would you explain to me what you mean by discounting?

Mr. GILROY. Yes, sir. We have a chart.

Mr. EDWARDS. If you will explain it later, that is all right. I am not sure I understand it.

Mr. GILROY. We might take the time right now.

[Chart.]



Very simply, it is the reverse of compound interest. As the chart depects if you took a dollar and invested it, with compound interest, this dollar in the fifth year would be worth $1.93. If you take a look at the present dollar, again if you are expending dollars up front, what is the worth of that dollar to you now that is spent in the fifth year, it would be 52 cents.

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So we are saying that in order to realize savings through multi-year, you are going to spend a lot more money up front and you should discount this to see what its present worth is.

Money has earning power. It will not earn if you don't have it.

Mr. EDWARDS. So you are suggesting that some $700 million difference in the way they are looking at it and the way you are looking at it?

Mr. GILROY. Approximately, sir. We have a chart that will provide detail on that.

Mr. EDWARDS. Thank you.

Mr. GILROY. One last item is the completed contract method for federal tax purposes. This would not result in the diminution of savings to the Department of Defense per se, but what it can do is affect total savings to the Federal Government.

We have currently under the completed contract method—perhaps an example will help demonstrate the effect on savings—let's say a hundred aircraft are being bought and they are funded this year. It is going to take two years to deliver. Under the completed contract method profits wouldn't come up for taxation until the end of the third year.

You would have this year plus the two years for delivery before completion and thus three years before taxes. If you took the same basic example but it was 500 aircraft for five years, then in the fifth program year you have two out years for delivery of the final 100 aircraft you could delay taxes for seven years.

As I said, this doesn't directly affect DOD, however, it does affect the government.

[Chart.]

COMPARISON OF DEFENSE PROJECTED SAVINGS ON FY 1983 WEAPON SYSTEM MYC CANDIDATES WITH GAO DISCOUNTED SAVINGS (note a)

Summary	MY Contract Amount	Annual Contract Amount	Defense Projected Savings Amount	Defense Projected Savings Percent	GAO Discounted Savings Amount	GAO Discounted Savings Percent
Major Weapons System MYC Candidates	$7,898.3	$8,697.0	$798.7	9.2	$143.4	1.8
Other Weapon System MYC Candidates	259.4	340.1	80.7	23.7	42.4	12.5
Total	$8,157.7	$8,037.1	$879.4	9.7	$185.8	2.1

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Major Systems						
MLRS	$1,883.7	$1,876.8	b/$192.9	10.3	$ 27.7	1.5
CH-53E	1,154.5	1,217.1	82.6	6.1	14.4	1.2
NAVSTAR GPS	1,343.3	1,620.0	276.7	17.1	58.1	3.6
TA-O Oilers	1,061.2	1,126.2	75.0	6.7	18.5	1.6
SM-1	668.0	729.7	62.7	8.6	16.2	2.2
A-6E	631.7	662.0	20.3	3.1	-15.6	-2.4
EA-6B	473.9	495.0	21.1	4.3	2.3	.5
MK-48	648.4	686.5	38.1	5.5	c/10.7	1.6
DMSP	245.6	294.9	49.3	16.7	11.1	3.8
Total	$7,898.3	$8,697.0	$798.7	9.2	$143.4	1.6

a/ Based on February 1982 DOD provided data.
b/ Based on 7-year program.
c/ Incorrectly reported as $32.7 in PLRD-82-72.

COMPARISON OF SAVINGS ESTIMATES

There were twelve systems submitted or proposed for fiscal year 1983. We divided these up into major weapon systems and other systems. The first column on the chart is the multiyear contract amount—these are DOD figures—and the next column is the annual contract amount, the difference between the two for the nine major systems is $798.7 million and this is the defense projected savings for the systems.

The last column before the GAO computation is the DOD percent of savings. The percent is 9.2 percent of the annual contract amount. Taking the same amounts and putting them through the discount procedure, we come out with a GAO total estimated savings of $143.4 million and the percent of savings is reduced to 1.6 percent.

The other weapon systems (3 that are not major weapon systems) fare a bit better when they are discounted. The DOD savings are listed as 23.7 percent of annual contract cost or a savings of $80.7 million of an annual contract amount of $340 million.

When we put the DOD savings through discounting, they come out at 12.5 percent or savings of $42 million.

Here is a breakout of each of the systems.

[Charts.]

COMPARISON OF DEFENSE PROJECTED SAVINGS ON OTHER FY 1983 WEAPON SYSTEM MYC CANDIDATES WITH GAO DISCOUNTED SAVINGS (note a)

Other Projects	MY Contract Amount	Annual Contract Amount	Defense Projected Savings Amount	Defense Projected Savings Percent	GAO Discounted Savings Amount	GAO Discounted Savings Percent
AN/ALQ-136	$ 83.6	$121.8	$38.2	31.4	$23.9	19.6
NATO Seasparrow Kits	88.0	125.0	37.0	29.6	18.0	12.8
Mule	87.8	93.3	5.5	5.9	2.5	2.7
Total	$259.4	$340.1	$80.7	23.7	$42.4	12.5

a/Based on February 1982 DOD provided data.

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COMPARISON OF EXTENT OF ADVANCE PROCUREMENT UNDER ANNUAL CONTRACTS AND MULTIYEAR CONTRACTS WHEN END ITEMS ARE FUNDED

System	Contract Type	1984 Amount	1984 Percent	1985 Amount	1985 Percent	1986 Amount	1986 Percent	1987 Amount	1987 Percent	1988 Amount	1988 Percent
Multi-Launch Rocket System	Annual	$ —	—	$ —	—	$ —	—	$ —	—	$ —	—
	Multiyear	32.6	11.9	23.9	8.5	56.8	16.9	61.8	19.9	110.0	a/24.4
CH 53-E Helicopter	Annual	2.6	1.5	2.9	1.5	4.4	1.8	4.9	1.8	5.6	2.0
	Multiyear	8.1	4.9	51.9	27.9	87.0	33.8	107.7	37.4	84.4	32.9
Standard SM-1 (note b)	Annual	—	—	—	—	—	—	—	—	—	—
	Multiyear	15.1	11.6	29.4	22.1	29.4	20.1	29.2	19.2	—	—
EA-6B Aircraft	Annual	11.6	10.4	13.1	10.9	13.9	10.8	16.1	11.8	—	—
	Multiyear	15.1	13.6	36.2	32.9	38.1	32.7	38.7	30.6	—	—
A-6E Aircraft	Annual	4.6	3.2	7.1	4.3	7.2	4.1	10.5	5.5	—	—
	Multiyear	6.9	5.7	18.2	11.3	69.7	40.9	65.4	36.6	—	—
Total	Annual	$18.4		$ 23.1		$ 25.5		$ 31.5		$ 5.6	
	Multiyear	$77.8		$161.8		$280.8		$300.8		$194.4	

a/ Represents percent of advance funding for remaining years of acquisition.

b/ Represents program costs.

These are the other systems, other than the major systems.

This committee has expressed concern in the past about incremental funding. We must realize that a natural consequence of going multiyear contracting is incremental funding.

We have charted future year outlays for five of the proposed systems to give you an idea what the expenditure figures represent as far as incremental funding.

As an example let's start here with the CH-53 helicopter. Under an annual buy basis, the amount funded when DOD comes forward in 1984 to request funds for the CH-53, would be $2.6 million or 1.5 percent of the end item.

If it was multiyear, the Congress would have already funded $8.1 million or 4.9 percent. The amounts already funded represent under the annual contracting approved for long lead time advance buying. Under the multiyear, it would include advance long lead time buying plus EOQ (economic order quantity), advance buying.

Let us now jump from 1984 to 1986, and again DOD comes forward in 1986 and asks for the funds for whatever quantity they are going to buy at this time; from that gross request they would subtract out the figure that was already funded.

As the chart shows, at this point there would be $87 million of advanced funding under the multiyear contracting while there would only be $4.4 million under an annual buy.

So, in effect, the Congress has already funded 33.5 percent of the end item. Indirectly or however it may be viewed this is incremental funding. At the bottom of the chart you get a better idea of what the risks are if you go multiyear contracting for these five systems.

Under an annual contracting basis in 1986, you would have $25.5 million of the total end item funded for the five systems while under multiyear contracting you would have $280 million.

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So, if you are going to cancel in that year, this is the difference in the risk—annual versus multiyear.

Mr. ADDABBO. Mr. Gilroy, taking the CH-53 on an annual buy, you show the low buy. Take 1986, 4.4 on annual and 87 on the multiyear. How many are you buying for the 4.4 and how many are you buying for the 87?

Mr. GILROY. We are talking about the same quantities at that time, sir. It is just a matter of the way we are buying it. What we have here represented under multiyear is an advanced significant EOQ buy. To realize the savings, we would have to make this type of investment up front. Whereas on an annual basis, hypothetically, say we are going to buy 40 or 50 helicopters at this point, $4.4 million would be what you had already funded under an annual contract and $87 million would have been funded under a multiyear contract.

Mr. ADDABBO. In other words, you are saying over $80 million for advance procurement?

Mr. GILROY. Right. For both economic order quantity and long lead time.

That is it, if you have no more questions, Mr. Chairman.

PRESENT VALUE DISCOUNTING

Mr. ADDABBO. One of the things you pointed out, OMB circular A-94 actually directs all executive agencies use present value discounting in the evaluation of government decisions.

That especially concerns the initiation, renewal or expansion of a program which is expected to commit the government to a series of measurable costs extending over three or more years.

Do you feel entering into multiyear procurements of major systems falls into this OMB requirement?

Mr. GILROY. Yes, sir.

Mr. ADDABBO. In your opinion, did DOD apply this requirement in its final computation of the multiyear contract savings?

Mr. GILROY. If we are talking about the data submitted to the Appropriations Committee, they did not. It is our understanding they did go through discounting within the Department of Defense, but they didn't present the discounted figures to the committee.

Mr. ADDABBO. If they did submit them to the committee, you feel the potential savings would have been much less than they were alleging in their statements before the committee?

Mr. GILROY. Yes, sir, that is right.

Mr. ADDABBO. Additionally OMB also requires that all estimates of costs and benefits for the year of the planning period be made in constant dollars.

Did DOD follow this requirement?

Mr. GILROY. Again, sir, on the figures presented to you, they did not. We understand they used constant dollars when discounting within the Pentagon.

Mr. ADDABBO. Again, if they had used constant dollars, would the savings show less than what they presented to this committee?

Mr. GILROY. Yes. We used current dollars in our discounting. Constant dollar discounting would give you less than what we have arrived at in our discounting.

Mr. ADDABBO. Enclosure II of your April 1982 report compared defense's $879.4 million of claimed savings with several alternative discounted means of savings.

Why do you actually believe discounting is required and which method of discounting do you believe is most appropriate?

Mr. GILROY. I think I would like Dr. Roberts, the expert in this area, to answer that one.

Mr. ROBERTS. Mr. Chairman, the reason discounting is important is that you are asking the government—the Department of Defense is asking the government to change the rate of spending under multiyear contracting as compared with annual contracting; and, therefore, the Treasury would be required to put funds forth at a different rate.

Now, there is no question in my mind as an economist that the quantity buying, taking advantage of possible price increases and so on, is legitimate. There is no question about that.

There are legitimate reasons to get into economies of scale and mass production and so on. However, that is only one-half of the coin.

The other half of the coin is, if you come in earlier with your request, it has to be paid for at a different rate of funding.

Since we are the government, the cost to the government in our opinion is best reflected in government securities, intermediate to long term government securities which cover the period of analysis.

In this analysis it is from five to seven to nine years, which is what we used. The discount rate averages out to 13 or 14 percent. I checked the paper this morning. It is down a little bit now.

Additionally, if you use that interest rate to take account of the cost to the government for multiyear contracting, then one should also use current dollars. Current dollars reflect prices expected to prevail at the time the cost will be incurred. Using current dollars makes it a fair comparison.

Otherwise, if you didn't, if you use constant dollars instead of current dollars, you will be way over-estimating the effect of discounting future potential savings.

Our method is clean. It is consistent. It is entirely defensible from our point of view because it is the government we are talking about.

Certainly it is the cost to the government which would be represented in Treasury interest rates which we have used for discounting. The justification for discounting is simply that you are changing and therefore comparison alternative rates of expenditures that are going to be required under multiyear vs. annual contracting. That is our rationale. Have I addressed your question?

Mr. ADDABBO. The question also is, do you have any information that DOD actually used that method in their internal computations, but when they came to their presentation to the Congress, they showed a more rosy picture and tried to convince the Congress to go along with the multiyear procurement?

Mr. GILROY. We don't know what their intent was. We have been informed in talking to officials of DOD that internally they did use constant dollars and discounted the constant dollars, but they elected, for whatever reason, not to present these figures to the Congress.

Mr. EDWARDS. As a matter of practice, that is what they did? You are not talking about just a particular system, but as a matter of practice that is the approach they have taken?

Mr. GILROY. On multiyear, as far as we know, sir, yes; they haven't been discounted. The figures they presented this year and, as far as I know, the fiscal year 1982 proposals for the Black Hawk and the F-16, were not discounted. It has been their practice, to our knowledge, to submit their budgetary data or firm proposals if they have them but without discounting expected savings.

Mr. ADDABBO. The discounted savings and projected savings which you show on chart 4 on the presentation to the committee, does that give the committee a breakout of the estimated savings claimed by DOD and how it compares to your estimates if you apply both the present value discounting, estimating constant dollar requirements?

Mr. GILROY. Yes, sir. Starting from left to right, the first column represents the multiyear contracting amount; the second column would be if you went on an annual contract amount, and then the defense takes the difference between those two and says there are savings of $879 million and this represents 9.7 percent of the annual contract amount.

When we went through our discounting, this came out to about $185 million or 2.1 percent. That is for all twelve systems.

Mr. ADDABBO. You showed savings of only $185.8 million. It is still a savings in defense dollars however it is not $879 million. However, taking your low figure of $185.8 million, which is based on the fact that all criteria must be met, if any of the other criteria are not met, which is a possibility, then that savings might not even be realized?

If you don't have stability of funding or stability of design and changes, that $185 million figure could dissipate very quickly?

Mr. GILROY. Basically that is true. I think you have to remember, Mr. Chairman, the figures are based on soft data, on budgetary data. It could be the savings would be greater or lesser once they got firm proposals, but your concern is on target.

You should weigh the risk you are going to be involved in under multiyear contracting against the $185 million of discounted savings.

Mr. ADDABBO. What you are pointing out is actually the contract savings estimates are primarily based upon soft budgetary data, judgmental estimates and just preliminary vendor quotes. There has been no solid quote from the vendors. Aren't you really telling the committee today that the budget request for multiyear contracts and the anticipated savings were actually not sound budget quality estimates?

Mr. GILROY. The savings, as far as we are concerned, are not sound quality estimates. I am sure the Department of Defense expected that for budgetary purposes they were giving you the best information they had available.

At this point in time there probably wasn't time to get firm proposals from contractors. What we are saying in the testimony, (we mentioned the two-step process) is that they should have systems approved or authorized to go ahead and then get proposals and not enter into a firm multiyear contract until they have both annual

and multiyear proposals so a comparison can be made to see what the savings, the real savings are.

Mr. ADDABBO. The Black Hawk has gone multiyear. Do you believe the claimed savings in the case of the Black Hawk is sound and reasonable?

Mr. GILROY. —The savings were not discounted, Mr. Chairman,— but they did get firm quotes on both an annual and a multiyear basis. So to that extent, they are firm.

Mr. ADDABBO. In April of this year the Navy stated that they recalculated their estimated savings, which increased from $316.3 million to $407 million. Did any of the other services recalculate their estimated savings?

Mr. GILROY. If they have, we are not aware of it at this time, sir.

Mr. ADDABBO. Did your conclusion that these estimated savings are not reasonable take into consideration the recalculated Navy estimates?

Mr. GILROY. We didn't include the new Navy estimates in our figures.

Mr. ADDABBO. You mentioned in your report that firm proposals had been requested on four of the proposed projects. Which projects were they?

Mr. GILROY. The CH-53, A6E, EA-6B, and the MLRS.

Mr. ADDABBO. When did the services expect to receive final proposals from these contractors?

Mr. GILROY. According to our records, sir, in the CH-53, October of 1982; the A-6, in September of 1982; the EA-6B in November of 1982, and the MLRS in October of 1982.

Mr. ADDABBO. Given the uncertainty of the projected savings, what alternatives are available to the Congress to maintain the full funding discipline?

Mr. GILROY. This is a difficult one because, as I tried to explain on the CH-53, a normal consequence of multiyear contracting is incremental funding.

About the only thing we would, I guess, put forth, would be a limit of some kind on the advance funding of the end item. For example here on the CH-53 on that chart—take a look at Chart 6, look at fiscal year 1986, under the CH-53, you will see the percent of advance funding of the end item is 33.5 percent.

One might place some kind of a limit as far as advance funding goes but you would have to bear in mind that this could defeat the purpose of multiyear contracting because you usually need to spend heavy in the early years in order to enjoy out year savings.

But if you wanted to, you could probably put some brakes on what percent of the end item could be funded in advance. On an annual basis, as we mention in our testimony, it usually didn't exceed eleven percent. In this case, the advance funding for the CH-53 is 33 percent and the A-6E, in year 1986, is 40.9 percent.

Mr. ADDABBO. The gentleman from Alabama.

PRESENT VALUE DISCOUNTING

Mr. EDWARDS. You know, I just don't understand that chart at all.

I am sitting here trying my darndest to figure out what you are saying to me.

Do you want to say it to me in my kind of language?

Mr. GILROY. I will try, sir. It is not easy to understand. We have gone round and round ourselves on this.

What we are talking about, and it is best to start back at 1984, and compare annual—an annual buy, and let's take the CH-53 again, an annual buy versus a multiyear buy.

You are authorized under annual buying to do advance buying on long lead time items. When the Department of Defense would come in in 1984 to buy a certain amount of those helicopters, you would have funded, previously funded—in prior years, fiscal years 1983, 1982—$2.6 million or 1.5 percent of what you were requesting in 1984, that is, what DOD was requesting in fiscal year 1984.

Under a multiyear contract when DOD made its request for 1984 you would have already have funded $8.1 million, so you would have funded in advance 4.9 percent of the amount DOD was requesting that year.

Now lets jump over fiscal year 1985, and get to fiscal year 1986. Here you see that when DOD comes in in 1986 to the Congress, they would have advance funding, under an annual basis, of $4.4 million or 1.6 percent of the cost of the end items they intend to buy that year, but under a multiyear they would have had advance funding of $87 million or 33.5 percent of what you were going to buy that year.

This is the result of early expenditure of funds under a MYC. The 1986 advance funding is long lead time buys plus economic order quantity buying under multiyear. The annual advance funding is just long lead time.

Mr. EDWARDS. Going back to chart 4, you show the defense projected savings and your discounted savings. Just take the major weapons column for example.

You are saying that they claim $798.7 million in projected savings?

Mr. GILROY. Yes.

Mr. EDWARDS. When you discount those savings, you come up with $143.4 million?

Mr. GILROY. Yes, sir.

Mr. EDWARDS. What you are telling us is then that they are, in effect, over-selling the value of multiyear procurement by that extent?

Mr. GILROY. There's a lot of things that we don't know about the proposed candidates. First of all, these are DOD-proposed candidates.

I don't know if they are the best candidates. Perhaps there are other multiyear candidates that would fare better, have a better savings. We also have to go back in time and recollect that DOD has said in testimony that they would expect that under multiyear they would enjoy savings of ten to twenty percent. Considering this 9.2 percent is fairly close to at least the bottom part of that scale.

But, when we looked at the proposed candidates, and they looked good until we found out that they had not discounted as directed by OMB circular A-94. We then went through a discounting procedure and said that the savings to us, using the discounting, is $143

million and that represents 1.6 percent, a very substantial difference.

The $143 million, if that in fact represents good firm savings includes such things as production efficiencies, maintaining your work force, continuity in contracting, and less paperwork through multiyear contracting.

The other part of the savings is escalation avoidance. Discounting, by the way, is very sensitive to when you spend the funds. Paul Roberts could address this in more specific terms, but your rate of expenditures, your outlays in future years, depending upon when they occur, can significantly affect what your discounted rate is going to be, or what your discounted amount is going to be.

Mr. EDWARDS. I want to be sure what you are saying, though. Is this a serious indictment of the method by which the Defense Department has arrived at these estimates?

Mr. GILROY. I wouldn't say it is a serious indictment. I would say it is looking at it—

Mr. EDWARDS. You would not say it is a serious indictment?

Mr. GILROY. From our standpoint. I think what we are saying is that to be realistic, DOD should have used discounting; I am sure defense is saying our normal procedure is to present budgetary type estimates to the Congress and they don't go through the discounting.

However, they did do it in-house.

As we understand it, they used constant dollars and a ten percent rate, which I believe, would come out at a lower savings figure than what we show here.

So if one accepts that discounting is the way to go, (and OMB Circular A-94 says it is), then OMB Circular A-94 should apply to the defense saving figures.

When you ask, is it a serious indictment, our response is that we did something we felt DOD should have done and should have reported to the Congress.

They will have to answer why they didn't report these figures to the Congress.

Mr. EDWARDS. At the point we are talking now, you are talking about estimates before they actually have contracts?

Mr. GILROY. Yes.

Mr. EDWARDS. Is it fair to say that after they have a contract, then all of this becomes clear and it is put in proper perspective, or is there still a problem after the contract?

Mr. GILROY. There will be risk, if you go multiyear. I think before you can make a decision on whether the risks are warranted, you should have firm proposals on an annual and multiyear basis and compare the two, and if multiyear indicates significant savings, (whatever you decide is a significant saving), you would make a decision then whether the risk that is involved is worth it.

The risk problem is the one we were addressing on that chart six in answer to a previous question.

FIRM QUOTAS NEEDED

Mr. EDWARDS. If you were the Secretary of Defense and you read the Comptroller General's report, or you were sitting here listening

to Mr. Gilroy testify, what would the Secretary of Defense likely do as a result of all of this?

What would he go back and say to the Pentagon? What do you think he should say?

Mr. GILROY. I would have a hard time speaking for the Secretary of Defense. If I were in those shoes, I certainly would ask for firm quotes from contractors on an annual and multiyear basis for each of the twelve systems.

I would then have get a better idea of which way to proceed.

We are talking about budgetary, soft type data here. The firm quotes would give me a better idea of whether it was worthwhile to proceed on multiyear contracting.

Mr. EDWARDS. In other words, you would not make a final decision to proceed with multiyear until you had those firm quotes? You would not make that decision based on an estimate such as you described here?

Mr. GILROY. That is correct, sir. I would not.

Mr. EDWARDS. Thank you, Mr. Chairman.

ENHANCEMENT OF COMPETITION

Mr. ADDABBO. One of the selling points of multiyear is that it should enhance competition.

Do you find any of the proposed multiyear projects were not consistent with this objective?

Mr. GILROY. Most of these contracts were in a first or second production run. Therefore, it wasn't reasonable to get competition. We didn't find that there was any inconsistency. There just wasn't an opportunity for competition in most of these cases.

B–1 MULTIYEAR CONTRACT

Mr. ADDABBO. During the course of your study did you examine whether the DOD met established criteria for multiyear procurement; that is, mature system, having completed testing, and so forth, of the B-1 and whether or not the B-1 program will meet that criteria by the beginning of fiscal year 1984?

Mr. GILROY. We did not look at the B-1 at all. We understand the $800 million or so savings that are being reported as multiyear savings on the B-1, are first not discounted and second, I understand there will not be a firm quote until the end of this year or the first part of next year on the B-1.

Mr. ADDABBO. So that $800 million is pretty soft?

Mr. GILROY. I would say it is at this point.

Mr. ADDABBO. The gentleman from Pennsylvania, Mr. Murtha?

Mr. MURTHA. I have no questions, Mr. Chairman.

CAUTIOUS APPROACH TO MULTIYEAR CONTRACTING

Mr. ADDABBO. In the past GAO has stated that "multiyear contracting is a viable acquisition method" and last year you testified that multiyear contracting of major weapons should be done cautiously.

Do you believe the fiscal year 1983 requests for multiyear contracting represents a cautious approach?

Mr. GILROY. I don't know if cautious is the right word. We mentioned in the past that we wanted a cautious, prudent approach. I feel twelve systems may be too many. Certainly in our view it is less than cautious. I think a cautious approach would have a better idea of annual and multiyear costs before we would want to go forward with multiyear contracting.

So in that regard I would say this is not a cautious approach.

COMPLETED CONTRACT METHOD OF ACCOUNTING

Mr. ADDABBO. You mentioned before in your testimony deferral of taxes. If a contractor uses the completed contract method and actually since a five-year multiyear contract and the actual product takes two years to complete, would we, in fact, allow him seven years of tax deferrals?

Mr. GILROY. I think we are talking about a five year contract where in the fifth program year there are two years to deliver the item. Then it would come out to seven years.

Mr. ADDABBO. That would give him a tax deferral for seven years?

Mr. GILROY. Yes, sir.

Mr. ADDABBO. So we can see why the contractors are pushing for multiyear?

Any further questions?

ENHANCEMENT OF THE INDUSTRIAL BASE

Mr. EDWARDS. Just one, Mr. Chairman.

You raise an issue in here on page three of your statement, "To what extent and under what circumstances should enhancement to the industrial base be demonstrated?"

Then back on page 4, quickly reading it, as I read what you say no page 4, "DOD did not suggest any significant enhancement of facilities at the prime or first tier subcontractor levels," and so forth.

Are you saying there that they, in fact, have failed that test?

Mr. GILROY. No, sir, we are not. If we are talking about the prime facilitizing, for example, bringing on more productive equipment, it won't happen. On these type contracts the contractors are already in their first or second production run.

So that has already been done. We know very little at this point of the relationship between the prime and the subcontractor or lower tier subcontractors or suppliers; just what is happening at those levels we are unaware.

We would certainly speculate that part of the savings we are talking about are taking place because the prime is getting competition and this may enhance the industrial base between the prime and lower tier subcontractors.

MULTIYEAR TEST PERIOD NEEDED

Mr. EDWARDS. Summing up what you have told us, is it fair to say multiyear procurement appears to be working but that the method by which these determinations are made could be improved by having some firm contracts before proceeding?

Mr. GILROY. I think we need a test period. We need a better historical perspective.

We are fairly new when it comes to multiyear contracting on major weapon systems, at least under the new enhanced authority of multiyear contracting.

We may need a longer time, and perhaps with fewer systems that are closely monitored to find out just what the problems are and how best to deal with them.

Mr. EDWARDS. But your other systems, you find that we do better with the smaller systems?

Mr. GILROY. If we look at other than major systems which are bought over a shorter period of time, it certainly does look like there are greater opportunities. We don't have an explanation for that, at least at this point.

Mr. EDWARDS. Would it be fair to say the other systems, as opposed to major weapon systems, would be less complicated systems?

Mr. GILROY. It may be a reason for the more attractive savings.

Mr. EDWARDS. Stability of design is what I was trying to say. Somewhere you said all these things.

Mr. GILROY. That was one of the criteria to be used.

Mr. EDWARDS. Thank you, Mr. Chairman.

Mr. ADDABBO. Mr. Gilroy, in light of the fact that there will be some additional time before we actually mark up our bill and it has been some time since you have made your survey, I would ask you to update this analysis and determine whether there have been any new developments in this area and whether DOD has corrected some of the deficiencies.

Mr. GILROY. We will, sir.

Mr. ADDABBO. Thank you very much.

While you are doing that, you might include my favorite topic, the B-1. Also, we have a few questions that I wish you would answer for the record.

[CLERK'S NOTE: Questions submitted by Mr. Addabbo and the answers thereto follow:]

ASSESSMENT OF DOD'S CLAIMED SAVINGS

Question. What is the relationship of the time value of money, discounting, and Defense's claimed multiyear contract savings?

Answer. The time value of money concept holds that future dollars are worth less than current dollars; i.e., money has value over time. Discounting is a technique which recognizes this concept, and when applied will reflect the time value of money. Defense's claimed multiyear contract savings have not been discounted for the time value or alternative uses of money. We believe that only discounting accurately reflects true savings.

Question. What percent of Defense's projected savings for multiyear versus annual contracting reflects escalation avoidance?

Answer. Approximately 50 percent based upon the difference between Defense's savings stated in constant and current dollars.

Question. Is escalation avoidance a valid multiyear contract savings?

Answer. We do not consider escalation avoidance to be a *true* savings derived from multiyear contracting. The acceleration of de-

liveries under any contract will create some escalation avoidance. Valid multiyear contract savings include economic order quantity purchasing and certain manufacturing production efficiencies.

Question. We tend to assess the savings of multiyear contracting with the savings as they relate to the Department of Defense. However we also need to examine the savings as it relates to the Government as a whole. Can a contractor use the completed method for income tax purposes, thus extending his tax payment deferral period when entering a multiyear contract?

Answer. Yes.

Question. Were you able to assess the overall impact of using the completed contract method in both multiyear procurement and annual contracts?

Answer. No.

Question. Were you able to determine if any of the contractors involved with the fiscal year 1983 multiyear program use this method of accounting?

Answer. Several contractors involved with the fiscal year 1983 multiyear program used this method of tax accounting. They include:

Grumman Corp., EA-6B, A-6E.
McDonnell-Douglas, KC-10.
United Technologies, CH-53E.
Raytheon, Seasparrow Kits.

The completed contract method is generally used by contractors in the Defense/aerospace industry.

Question. Did DOD take this factor into consideration when estimating their claimed savings.

Answer. We found no evidence that Defense considered this factor when estimating their claimed savings.

ESTIMATED SAVINGS ON MULTIYEAR CONTRACTS

Question. Multiyear contracting, as you know, is a practice that has been with us for some time, and during last year's hearings, DOD advised this Committee that for fiscal year 1980, it has obligated $1.7 billion under multiyear contract actions over $10,000. Were you able to verify this amount?

Answer. No. We verified approximately $366 million multiyear contract obligations against fiscal year 1980 multiyear contracts (for actions exceeding $10,000).

Question. What was the magnitude in terms of numbers, contracts, and dollar value multiyear contract awards for fiscal year 1980?

Answer. Defense reported 268 multiyear contracts for fiscal year 1980. Their reporting system does not provide a figure for contract values. Defense procurement officials confirmed only 50 of the 268 as multiyear contracts and identified 7 others. The 57 fiscal year

1980 multiyear contracts had an estimated value of $1.4 billion. Most of the multiyear contracts listed in DOD's fiscal year 1980 data base had been miscoded.

Question. What is the amount of estimated savings on the fiscal year 1980 multiyear contracts?

Answer. Defense estimated savings of approximately $126 million for the 57 fiscal year 1980 multiyear contracts.

Question. In the past, we have been told the multiyear purchasing would yield a 15–20 percent savings. Is that also your understanding?

Answer. Yes. Estimates in the 10–20 percent range have been projected.

Question. Overall, DOD is estimating a savings of over $890 million for its 12 fiscal year 1983 multiyear procurement projects. What is the total multiyear program costs for these 12 projects, and what is the saving percentage compared cost?

Answer. Total multiyear program costs for the 12 fiscal year 1983 multiyear candidates is approximately $13.3 billion. The percentage of savings for these 12 systems compared to total program cost is 6.2 percent if Defense's unadjusted estimates are used. Adjusting for the time value of money and eliminating escalation avoidance reduces the projected savings to 1.4 percent of total program cost.

Question. As I understand it, you also concluded in your report that these estimates are neither reasonable nor realistic? Is that correct?

Answer. We concluded in our report that the budgetary nature of Defense's justification data was insufficient to establish the reasonableness of the claimed savings. We also concluded that the claimed savings should have been discounted to consider the time value of money and to eliminate escalation avoidance as a savings. Defense's projected undiscounted savings are materially overstated.

COMPARISON OF ALTERNATIVE CONTRACTING METHODS

Question. In determining whether multiyear contracting is the best procurement strategy, a comparison of both the multiyear approach and the annual procurement technique should be made.

Did DOD make this type of comparison, and if so, what was your assessment of their effort?

Answer. None of the projected savings were based on comparisons of firm contractor proposals made on an annual contracting method and the multiyear contracting method. Further, we found that for 6 systems the invitation for bids request only multiyear proposals. We believe that firm contractor proposals on both an annual and multiyear basis are required for an accurate and valid comparison.

CANCELLATION COSTS

Question. Enclosure I of your report uses the term cancellation exposure. Is this the same as cancellation cost?

Answer. No. Cancellation exposure refers to the Government's maximum potential loss in the event of contract cancellation. A cancellation cost is an unfunded contingent liability which is realized if a contract were cancelled and may require additional Congressional appropriation of funds.

Question. How did the term cancellation exposure arise, and what is its significance?

Answer. The term "cancellation exposure" was coined at GAO in an effort to more accurately portray the maximum potential loss to the Government if a multiyear contract were cancelled. Cancellation costs, as described above, are unfunded costs. Cancellation cost places emphasis on the potential need for additional funds whereas cancellation exposure places emphasis on the potential loss of value (partially completed and unuseable bits and pieces).

Question. Have you been able to assess the total dollar impact as it relates to cancellation exposure for a multiyear program?

Answer. Enclosure I of our report (PLRD–82–72) shows an aggregate cancellation exposure of $731.5 million for the 12 multiyear candidates. The figure represents the total maximum cost incurred beyond the first program year if the second and subsequent program years of the multiyear contracts are not bought. This amount would change each successive year of the contracts.

MULTIYEAR CONTRACTING FOR THE B–1 BOMBER

Question. During the course of your study, did you examine whether the DOD met established criteria, i.e., mature system, having completed testing, etc., for multiyear procurement of the B–1, and whether or not the B–1 program will meet that criterion by the beginning of fiscal year 1984?

Answer. We have not examined the B–1 bomber in relation to multiyear procurement. We do note, however, that the first 8 production aircraft would not have been completed by fiscal year 1984.

Question. Also, do you believe the $800 million savings estimate in fiscal year 1981 dollars is at all realistic without a proposal from the contractor on annual buys and in multiyear buys, which is not due to be received until December of this year?

Answer. We do not have much confidence in savings based on budgetary or otherwise "soft" data. Firm proposals are probably the minimum required basis to establish the reasonableness of the $800 million savings. These are not expected until April 1983. In addition, B–1 Program Office officials have advised us that the initial $800 million estimate was derived by multiplying the projected

F–16 aircraft multiyear contract savings factor of 7.7 percent to the B–1 flyaway cost less engineering change orders. We have no confidence in this methodology because (1) the F–16 data was not based on firm proposals, (2) the F–16 program has over 1,000 aircraft under contract and over 700 delivered whereas the first B–1 is yet to be delivered, and (3) the F–16's 7.7 percent savings projection becomes 2.9 percent when appropriately discounted to reflect the time value of money and to eliminate escalation avoidance as a saving.

[CLERK'S NOTE: End of questions submitted by Mr. Addabbo.]

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WEDNESDAY, AUGUST 4, 1982.

MULTIYEAR PROCUREMENT

DEPARTMENT OF DEFENSE WITNESSES

HON. JACK R. BORSTING, ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)

STEPHEN A. TRODDEN, DIRECTOR FOR PROCUREMENT, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (PROGRAM/BUDGET), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)

WILLIAM A. LONG, DEPUTY UNDER SECRETARY FOR ACQUISITION MANAGEMENT, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING

GEORGE E. DAUSMAN, DEPUTY FOR MATERIEL ACQUISITION MANAGEMENT, OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY (RESEARCH DEVELOPMENT AND ACQUISITION)

COL. RONALD K. ANDRESON, PROJECT MANAGER, BLACKHAWK, U.S. ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND

LAWRENCE R. SEGGEL, PROJECT MANAGER, MULTIPLE LAUNCH ROCKET SYSTEM (MLRS), ARMY MISSILE COMMAND

REAR ADM. R. A. MILLER, USN, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF THE NAVY COMPTROLLER

REAR ADM. J. S. SANSONE, USN, DEPUTY CHIEF OF NAVAL MATERIAL (CONTRACTS AND BUSINESS MANAGEMENT)

BRIG. GEN. BERNARD P. RANDOLPH, USAF, DIRECTOR OF SPACE SYSTEMS AND COMMAND, CONTROL COMMUNICATIONS, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

BRIG. GEN. GORDON E. FORNELL, USAF, DEPUTY DIRECTOR OF DEVELOPMENT AND PRODUCTION, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

Mr. ADDABBO. The committee will come to order.

Today the committee will hear testimony from Dr. Borsting on the Multiyear Procurement Program for fiscal year 1983. The department is proposing to initiate multiyear contracts for 11 new systems in fiscal year 1983.

Dr. Borsting, as you know, this committee supported a careful, prudent use of multiyear procurement contracting. We believe that, where appropriate, multiyear contracting offers substantial advantages over annual contracting. We expect that the Department, in preparing its fiscal year 1983 budget request, has performed a comprehensive review of the services' requests for multiyear contracts, and that you are here to tell us about it.

Your full statement has been given to the committee prior to the hearing, has been read, and will be made part of the record at this point.

[The statement of Mr. Borsting follows:]

STATEMENT OF

THE HONORABLE JACK R. BORSTING

ASSISTANT SECRETARY OF DEFENSE

(COMPTROLLER)

Dear Mr. Chairman and Members of the Committee:

I am here today to discuss multiyear procurement and the multiyear candidates proposed by the Department of Defense in the FY 1983 budget. I want to emphasize at the outset that this statement addresses the multiyear procurement programs in the FY 1983 budget and additions thereto. Programmatic actions by other committees are not addressed in this statement. The Department is proposing to initiate multiyear contracts for 11 new systems in FY 1983 with savings currently projected to be $657.9 million. This is an increase in savings over our previous estimate for these 11 systems. In addition, the Department expects to save an additional $712.4 million on multiyear contracts initiated in FY 1982. The higher current savings estimates reflect continuing interface with the Systems' contractors and an update of the Department's initial conservative position. The 11 new multiyear candidates are:

Multiple Launch Rocket System (MLRS)
Standard MR SM-1 Missile (Control & Guidance)
EA-6B Aircraft
A-6E Aircraft
NATO Seasparrow
Modular Universal Laser Equipment (MULE)
Fleet Oiler (TAO)
MK-46 Torpedo
CH-53E Helicopter
Defense Meterological Satellite Program (DMSP)
UH-60A Blackhawk Engines

The eight multiyear programs initiated or proposed in FY 1982 are:

F-16 Aircraft
TRC-170 Radio
C-2 Aircraft
Blackhawk Helicopter Airframe
ALQ-136 Radar Jammer
Standard MR SM-1 (Rocket Motor)
M-1 Fire Control System
NAVSTAR Global Positioning System

In addition to the 11 multiyear candidates addressed in the budget request, by letter on April 21, 1982, Mr. Carlucci requested that you consider the KC-10 for multiyear contracting. This multiyear would save an additional $658 million.

Before discussing each of these candidates in detail, I will address the Department's funding policy for multiyear contracts and the criteria used for selecting these candidates.

BEST DOCUMENT AVAILABLE

FUNDING POLICY

Last year when the decision was made to adopt multiyear procurement on a broader scale, several alternatives were considered for financing multiyear contracts. Those alternatives ranged from classic full funding in which all advanced procured components would be fully funded through incremental funding of the advanced procured components to incremental funding of the entire procurement.

Each alternative offered advantages and disadvantages. While full funding of Economic Order Quantity (EOQ) procurements is consistent with previous funding policy, it requires a significant amount of obligational authority up-front. This requirement for up-front obligational authority discourages the initiation of multiyear contracts because the Services often have immediate need of obligational authority for force level modernization. Long range savings can be overlooked in the face of near term needs. On the other hand, incremental funding and the adoption of large cancellation charges reduces up-front funding requirements, but it commits future Congresses and the Department to repeated funding requests for programs which were begun with only small dollar commitments.

The funding policy which the Department proposed for the FY 1982 multiyear initiatives and which we are proposing for the new initiatives in FY 1983 represents a compromise between these two philosophies. That policy can be described as full funding of end items and termination liability funding of advanced procured EOQ procurements. With the exception of budget requests for advance procurement, all of the funds needed to complete an end item are being requested in the year in which funding is first requested for the item. This policy represents no change from classic full funding. As with existing full funding policy, exceptions to this policy will be considered. However, an exception must have very unique characteristics to be considered. As for the economic order quantity procurements, by basing the budget request on the termination liability value of the components, the funding plan makes it possible for the Congress or the Department to terminate a multiyear contract at any time without the necessity of appropriating large amounts of TOA to fund cancellation charges.

Termination liability is the value of outlays to be incurred in the budget year plus the cost of terminating the production line should a termination decision be made. It does not involve the budgeting of large amounts of TOA that will never be used. On the contrary, the subsequent year budget request assumes that the entire value of the termination liability budget request will be available for the items in question. Budgeting on the basis of termination liability is not without some drawbacks, however. Since it represents a budget request for less than the full value of the components to be procured, a contract cancellation will mean that the advance procured components will be left unfinished. Therefore, a budget request based on the termination liability value of the components represents the budgeting of some "risk money". However, since the risk of cancellation is low, this appears to be reasonable and acceptable.

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An important aspect of this funding policy, one which I wish to stress very strongly, is that the Congress is losing very little flexibility by virtue of the creation of these multiyear contracts. While it is true that no one wants to cancel an existing contract, by funding these multiyear contracts upfront at the termination liability value of the EOQ, it will be possible to make program decisions without the necessity of appropriating additional obligational authority. The creation of large, unfunded cancellation charges would require these extra appropriations. None of the FY 1983 initiatives will require creation of an unfunded cancellation clause. Hence, I do not believe that the multiyear program should be viewed as an expansion of the uncontrollable part of the DoD budget.

Criteria for Selection

The Department used six criteria for selecting multiyear candidates this year. The six criteria are:

- Benefit to the Government
- Stability of Requirement
- Stability of Funding
- Stable Configuration
- Degree of Cost Confidence
- Degree of Confidence in Contractor Capability

These six criteria were identified to the Committee last year when the FY 1982 multiyear initiatives were presented to you. These criteria appear to be acceptable to the Committee and the essence of these criteria are contained in Section 909 of the FY 1982 Department of Defense Appropriation Authorization Act. The justification materials for multiyear procurement discuss the risks associated with these criteria in terms of low, medium and high categories as specified by the Committee in your report on the FY 1982 appropriations bill.

SAVINGS

There has been some criticism, by GAO and others, of our savings projections for our proposed multiyear candidates. Savings can be expressed in three terms - "then year" dollars, "constant year" dollars, and "discounted" dollars. "Then year" dollars is a term that simply refers to the absolute level of resources involved at a point in time without regard to its "value" relative to any other point in time. For example, a $50,000 salary in 1992, expressed in "then year" dollars is still a $50,000 salary --even though in "constant" 1982 dollars it might only be worth $20,000. Our entire federal budget, including revenues, expenses, budget authority, outlays, deficits, etc., is expressed in "then year" dollars. And so are DoD's estimates for multiyear savings. It is true that it is sometimes useful to take the inflation out of "then year" estimates and compare things on a "constant" dollar basis. We did this for our multiyear candidates and still project significant savings on a "constant" dollar basis.

Another useful technique when comparing two different cash flow projections is to factor in the "time value" of money. This can be done at any number of

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"rates" (i.e., percentage expressions of the value of money or the cost of money) and the result is the restatement of the two cash flow projections in present value or "discounted" terms. In the case of multiyear procurement, if the discounted outlays from the multiyear proposal are less than the discounted outlays from annual buying, then one can conclude that the multiyear proposal represents an economically attractive return at the postulated rate.

DoD has done discounting analysis on all of our multiyear proposals. Using OMB's A-94 Circular (which prescribes a two-step process - conversion of "then year" dollars to "constant" dollars and then discounting at 10%), we still show positive savings for all of our proposals. We do not agree with GAO, however, that this technique results in a better statement of savings. It simply results in a different statement of savings in such a way that our confidence in the validity of our conclusions is increased. The inference that we over-stated savings by expressing them in the same terms used for all other components of the federal budget is erroneous.

I would like to address two aspects of current or proposed legislation and then briefly summarize our FY 1983 multiyear candidates.

Section 769 of the FY 1982 DoD Appropriations Act

Section 769 of the FY 1982 DoD Appropriations Act prohibits the use of any FY 1982 funds on a multiyear contract for a major weapon system unless the multiyear contract is specifically approved in the act. This language forecloses opportunities for multiyear procurements which arise during execution of major system procurements. We will lose the opportunities to save money through multiyear procurements because of this language. I hope this provision can be excluded from the FY 1983 bill. It should be possible for the committees and department to reach an agreement which would allow a case-by-case analysis of multiyear contracts for major weapon systems. I sincerely urge such action.

Section 909 of the FY 1982 DoD Appropriations Authorization Act

By virtue of the Department's desire to keep cancellation charges to a minimum and in keeping with our belief in the virtues of the full funding policy, it might appear that the Department's funding policy is at cross purposes with Section 909 of the FY 1982 DoD Appropriations Authorization Act. This is not the case. Section 909 provides for the inclusion of both recurring and nonrecurring costs in a cancellation ceiling. From the standpoint of both the recurring and nonrecurring costs, the multiyear funding policy is not inconsistent. Section 909 provides for the creation of a cancellation clause associated with a contingent liability, cancellation of outyear procurement. Funding EOQ procurements up front on the basis of their termination liability value covers a current liability, not a contingent liability. That is, it provides for a liability in the budget year rather than in a future year.

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Therefore, the EOQ request is largely for items which are not subject to coverage under the cancellation ceiling. Admittedly, there is a portion of the termination liability funding which is for shutdown of production lines. That portion of the request will not generate an outlay in the budget year, but that amount represents a smaller piece of the EOQ budget request. Hence, for recurring costs apparent use of Section 909 authority has been limited. For nonrecurring costs our usage of Section 909 has been limited because current multiyear contracts are generally for mature systems whose nonrecurring costs have already been funded. In the future, we may be able to use it to promote non-recurring investment in productivity enhancing projects.

FY 1983 Multiyear Candidates

There are 12 new multiyear candidates proposed for FY 1983 which generate savings of $1315.9 million. A total of $425.2 million has been requested in new obligational authority in FY 1983 for the FY 1983 initiatives. In addition to the $425.2 million, an additional $101.8 million in obligational authority is being requested in FY 1983 to continue FY 1982 multiyear initiatives. This brings the total additional funding in FY 1983 for multiyear contracting to $527.0 million. FY 1983 also contains the first payoff, $245.0 million, from the multiyear procurements begun in FY 1982. The details of these FY 1983 impacts are reflected in Table I.

Before discussing the merits of each system, I want to make several observations about the multiyear candidates which you see before you.

We are proposing 2 major system multiyear contracts this year. I know that number may surprise you when I have just indicated that there are 12 new multiyear initiatives this year. The disparity exists because all but 2 of these multiyear initiatives are not major systems as typically defined by legislation. In your report of last year, this committee defined "major" to mean those systems for which a DSARC will be required. On the basis of that definition, one system - the Multiple Launch Rocket System qualifies. In addition, we have carried the definition one step further to add those systems for which a SAR report is being prepared. That definition adds a second system - the CH-53E helicopter.

Most of the multiyear candidates are very mature systems. So mature in fact that they have dropped from even SAR reporting. For example, contracts are being proposed for the A-6E and EA-6B aircraft. These aircraft have been procured for many years. The risk of cost growth is missing; the designs are stable and development has been long since completed. The types of candidates which would qualify as major systems - those for which a DSARC is pending -have, for the most part, not been included because the programs are not mature enough for multiyear contracting. The distinction is an important one because it speaks well for the level of risk which the Congress and the Department are facing in regard to the multiyear initiatives.

The distinction is also important because it serves to illustrate the differences between the multiyear contracts of the late 1960s and early 1970s and the multiyear contracts before you. The early multiyear contracts, from

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which the Congress drew many cautious lessons, combined development, design, and production together in one contract. The result was large contract cancellation charges associated with nonrecurring costs and uncertainty as to cost, schedules, quantities, and requirements. These concerns are missing from the present multiyear contracts. Criteria requiring stability of design, cost and requirement have limited the number of large multiyear contracts.

I will now briefly describe each of the 12 new multiyear candidates. The two major systems will be discussed first.

Multiple Launch Rocket Systems

The Multiple Launch Rocket System is a self-propelled rocket launcher used by the Army to suppress enemy field artillery. We are proposing a five year multiyear contract with options for two additional years in order to save $193.4 million through FY 1989. The budget request includes an additional $53.2 million in obligational authority to initiate this multiyear contract.

The MLRS program has a stable requirement and configuration and the long term savings are quite substantial.

CH-53E

The CH-53E is a three-engine heavy-lift helicopter used by both the Navy and Marine Corps. The planned multiyear covers a total of 61 aircraft which are planned for procurement in FY 1984 through FY 1988. Total program cost savings of $92.8 million are projected. This savings increase reflects a better definition of what savings are available in the multiyear environment and the conservatism of previous estimates.

The CH-53E has been in production since FY 1977 and is now a technically mature system. Cost confidence in the CH-53E is moderate to high. Although this program has suffered underestimates in the past, this degree of confidence is warranted because the FY 1983 estimate is based on actual costs of early production aircraft and because recent cost, schedule and management experience has been very good in this program. I am confident that before next year, when we request funding for production of the first eight aircraft under the MYP, the degree of cost confidence will be high.

BLACKHAWK/QUICKFIX Helicopter Programs

Additional obligational authority has been included in the FY 1983 budget to initiate multiyear contracts in FY 1983 for the airframe and engines for the BLACKHAWK and QUICKFIX helicopter programs. The Quickfix program uses a basic BLACKHAWK helicopter. Subsequent to submission of the budget, a reprograming was approved to initiate the airframe portion of this multiyear procurement in FY 1982. This three year multiyear airframe procurement is now under contract with negotiated savings of $81.1 million. The Armed Services Committee reduced our FY 1983 request by $155.2 million to reflect initiation of this multiyear in FY 1982.

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Extra TOA of $41.7 million over the annual requirement is requested in FY 1983 to initiate multiyear procurement of T700-GE-700 BLACKHAWK engines. This three-year multiyear procurement is estimated to save $14.9 million over annual procurements. The Army is also looking into expansion of this effort to include derivatives of the T-700 engine and will address this further during the afternoon session.

STANDARD MR (SM-1)

The standard MR is a medium range surface-to-air missile which is used on the FFG and DDG Class ships. The planned multiyear contract covers a total of 3,450 missile Guidance and Control Sections to be procured over the FY 1983-87 timeframe. It is estimated that this MYP will result in total program savings of $62.7 million.

Standard MR is an outstanding candidate for multiyear procurement since the programs requirements and configuration are remarkably stable. Additionally, the Navy has a high degree of cost confidence since standard missiles have been in production for 14 years with the current block model in production for three years.

MK-46 Torpedos

The MK-46 Torpedo is a conventional light weight topedo designed for launch from surface ships and aircraft. The planned program is a three-year multiyear contract covering FY 1983-85 for a total of 3,140 torpedoes. It is estimated that this MYP will result in savings of $38.1 million.

The MK-46 is a solid program which meets all established criteria for MYP. The current version of the MK-46 has been in production for 6 years. Requirements and configuration are stable. Additionally, due to the prior production contracts covering a total of 4,700 units, there is a high degree of cost confidence.

Modular Universal Laser Equipment (MULE) AN/PAQ-33

MULE is a man-packed laser device designed to provide forward observers the capability to accurately determine location and range of targets for attack by tracker equipped aircraft. The requested multiyear contracts cover all three major components of the system - The Laser Direction Range Finder, the Stabilized Tracking Tripod Module, and the North Finding Module. The total planned MYP covers a total of 340 units over the FY 1983-85 timeframe. Total savings are estimated to be $5.5 million or 6% under the cost of business as usual.

NATO SEASPARROW ORDALT Kits

In this case we are utilizing MYP to modify a system currently in use in the fleet. The current NATO SEASPARROW launcher is compatible with the RIM-7H missile. However, starting in FY 1983 the RIM-7M missile will be introduced into the fleet. In order to make the current NATO SEASPARROW launchers

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compatible with the 7M version, a significant modification to the current system is necessary. It is this modification package that we propose to procure with a multiyear contract.

The planned scope of the program is to procure a total of 67 ORDALT Kits over a five-year period. It is estimated that use of a multiyear contract, for this procurement, will result in total program savings of $37.0 million or 29% when compared with the projected costs for annual contracts.

Since this modification incorporates proven changes in already acquired launchers, the stability of the requirement is fixed. Additionally, cost confidence is high due to the low complexity of the change and contractor familiarity with the basic system.

TAO Fleet Oiler

The TAO is a 180,000 barrel capacity fleet oiler with 665 ft. length, 93.5 ft. beam, and 35 ft. maximum draft. The planned multiyear contract is for a total of five ships FY 1982 through 1984. It is estimated that this multiyear program will result in savings of approximately $75.0 million or 6.7% under the projected costs of annual contracts.

The TAO is an excellent candidate for multiyear procurement. Ship design was completed in November 1981 so that it has a stable configuration. The requirements are firm with the FY 1982 ship appropriated, the FY 1983 ship in the budget and three ships planned for procurement in FY 1984. Additionally, the Navy has a moderate to high degree of confidence in the cost estimates based on a firm design and informal industry feedback. Most importantly, the Navy plans to make this a competitive multiyear award which should further help to firm up cost estimates and further increase the cost benefit of the multiyear contract.

A-6E

The A-6E is a long-range all-weather carrier-based attack aircraft capable of delivering a large payload of weapons with a high degree of accuracy. In this requested multiyear the funding for end items from the multiyear is to start in FY 1984. The FY 1983 budget, however, contains advance procurement funds which are applicable to all 44 aircraft in the planned FY 1984-87 multiyear contract. It is estimated that this multiyear will result in total program savings of $50.7 million or 7.7% when compared with annual procurements. This is a savings increase of $25.2 milllion over the budget submission. This increase reflects better definition of the amount of savings achievable and it reflects our early experience with the Grumman C-2A multiyear.

The A-6E meets the criteria for multiyear procurement. The A-6E was first procured in FY 1969 and most known updates have been incorporated in the FY 1983 aircraft. Additionally, due to the long production run, there is a high degree of confidence in both the contractor capability and the cost estimates.

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EA-6B

The EA-6B is a four-place electronic warfare derivative of the A-6 attack aircraft. The FY 1983 request includes advance procurement for economic order quantity procurements associated with end item procurements in FY 1984, FY 1985, FY 1986 and FY 1987. A total of 24 EA-6B aircraft will be procured under the multiyear contract. It is estimated that multiyear procurement will save $38.5 million over the cost of annual procurements. This is a savings increse of $13.0 million since the budget submission. The savings increase reflects better definition of what savings are achievable and experience with the C-2A multiyear procurement.

The EA-6B meets the criteria for multiyear procurement. The requirement for these aircraft is steady and the ICAP II configuration will be the baseline configuration through the multiyear period. The long production run for this system gives us a high degree of confidence in the contractor's capability and the estimated cost.

Defense Meterological Satellite Program (DMSP)

DMSP is a joint service program which is DoDs most important single source of weather data. It is an advanced weather satellite system which supports both strategic and tactical missions.

The Air Force plans to initiate a multiyear procurement of 4 DMSP spacecraft and sensors in FY 1983 at a total contract price of $245.6 million. The FY 1983 funding will support full funding of two units and advance buy funding for two more units for which funding will complete in FY 1985. This approach will provide a $49.3 million savings or 16.7% of annual contract cost.

This program is well suited for a multiyear contracting approach. The requirement was recently revalidated (5 Oct 81) by the Joint Chiefs of Staff and is expected to remain unchanged during the contract period. This buy of satellites will be configured substantially the same as the four previous satellites procured and being manufactured.

The contractors (RCA and Westinghouse) have demonstrated their successful capability in their 15 years of manufacturing the DMSP spacecraft and primary payloads.

KC-10A Aircraft

The FY 1983 budget submission included the procurement of an additional 44 KC-10 tanker/cargo aircraft as part of our airlift mobility enhancement program. Since the budget was submitted we have determined that we can retain many of the advantages of the current KC-10 contract and achieve a more rapid delivery of the 44 aircraft with an expanded advance buy on a multiyear contract. Savings to the government will total $658 million of which $606 million is directly related to the multiyear aircraft contract and the rest is related to the accelerated deliveries of ancillary equipment.

Mr. Chairman, this completes my statement on multiyear procurement. We are available for any questions you may have.

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Mr. ADDABBO. In the interests of time, I would ask you to briefly summarize your statement.

Dr. BORSTING. Thank you very much, Mr. Chairman. It is always a pleasure to be before this committee. I have with me today at the table Mr. Bill Long, who is Deputy Under Secretary for Acquisition Management in the Office of the Under Secretary of Defense for Research and Acquisition, and it is really my office and his office that do the detailed screening of the services' requests. We are concerned, like your committee, about making multiyear work, and being very careful in our selection of multiyear candidates.

I also have with me representatives from each of the services, in case we get into detailed questions about the services' programs.

I would like to summarize my statement. As you pointed out, we have 11 new multiyear candidates for 1983. We also have the KC-10, which we sent over after the Budget submission and can be included as a twelfth multiyear candidate for 1983.

I would like to pass out four charts which I will use just to summarize some of the ideas that are in the statement. The first section of the statement talks about funding policy, and there has been a lot of confusion about the funding policy for multiyear. You can have a full funding policy that would fund the entire buy over four or five years, or you could have an incremental funding policy. We have chosen, in working with all four of the committees last year, a funding policy that we call funding to termination liability. I would like to illustrate this with an F-16 example, which is one of the multiyear contracts that you approved last year.

[Chart 1.]

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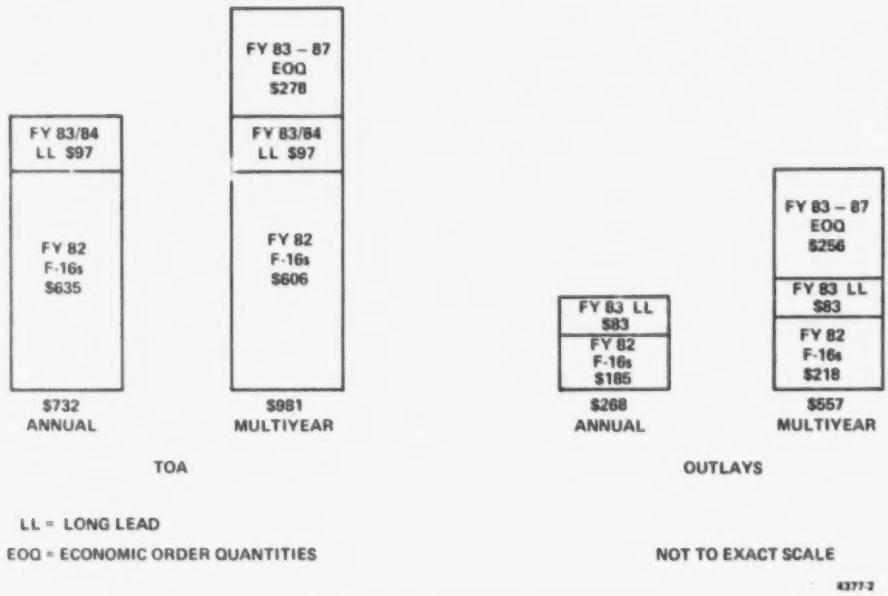
COMPARISON OF F-16 ANNUAL AND MULTIYEAR AIRFRAME CONTRACTS

Dollars in Millions



On this first chart we have shown obligation authority of an annual buy and a multiyear buy, and we have also shown outlays. First let's look at the obligation authority.

On the multiyear buy, there was full funding of the initial buy in fiscal year 1982 of 120 F–16 aircraft. In addition to that, we had long lead for 1983 and 1984. Now, this would happen no matter what, because we would be buying long lead items for annual procurement in 1983 and 1984.

On top of that was $278 million for economic order quantity procurements. The economic order quantity is to buy more of a certain component to get efficient savings. It is in addition to the normal procurement you would include in an annual funding or annual buy.

Now, on the right-hand side of the chart, you notice the outlays in the first year of annual and multiyear. Let's look at the multiyear. The first year procurement of 120 F–16s is completely funded, fully funded, but in the first year only $218 million will outlay, and of the $97 million long lead funding, only $83 million of that long lead will outlay in 1982.

Of the EOQ, $256 million of the $278 million will outlay in the first year. The difference between the long lead and the EOQ that will not outlay ($278 million minus $256 million) is about $22 million, and then you have a similar $14 million for Advance Procurement. If you add these two together, this is the amount that is not going to happen but if you terminated the buy—that is what it would cost to terminate.

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Now, if you do not cut off the buy at the end of the first year, that additional $36 million would continue to be spent in the next year. This is an example of what funding to termination liability does. It fully funds your first end items in the first year. It also funds the outlays for your long lead and your EOQ request the first year, and then it funds the termination liability of these items, so there are no unfunded items that future Congresses would have to worry about.

This is the funding profile and the type of multiyear funding that we agreed to with this and other Congressional committees last year.

Mr. ADDABBO. If I may ask one question, just for clarification. In the event the buy is completed, then you have a savings of what?

Dr. BORSTING. Are you talking about total savings? Let me get to that.

Mr. ADDABBO. What would happen to that $36 million?

Dr. BORSTING. It would spend out the next year.

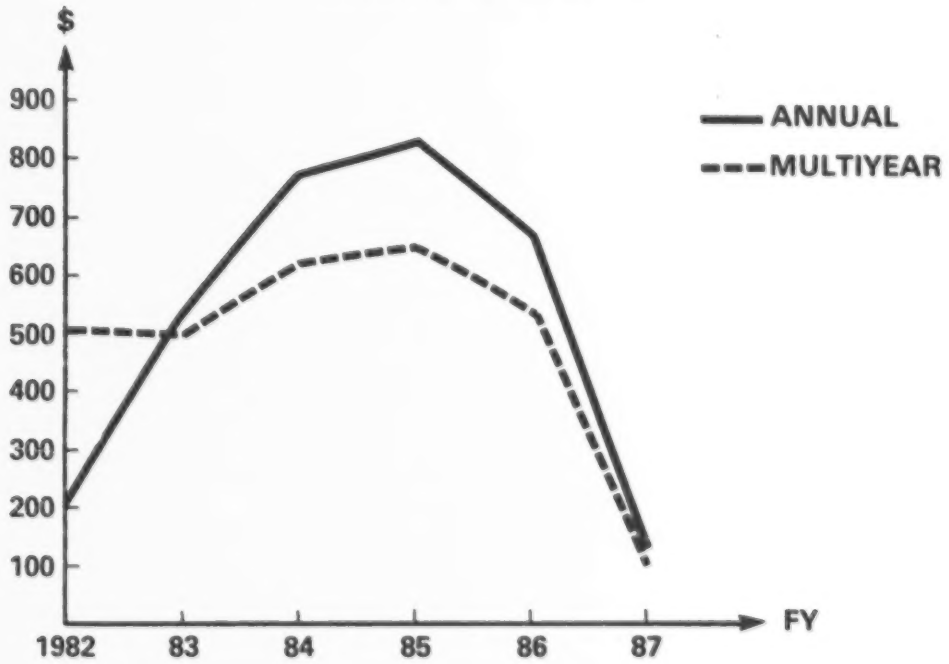
Mr. ADDABBO. You would reduce——

Dr. BORSTING. It would spend out in 1983. It just continues to be spent out. The 1983 EOQ continues to be spent.

[Chart 2.]

COMPARISON OF F-16 MULTIYEAR AND ANNUAL OUTLAYS (AIR FRAME)

DOLLARS IN MILLIONS



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Let me turn to the next chart. The next chart shows you an outlay profile for the F-16 in which, as we all know, multiyear outlays will outlay more the first year. The dashed line shows the multiyear outlay, and then the straight line the annual outlay. There is up-front funding on outlays and on obligation authority.

[Chart 3.]

EVALUATION OF F-16 MULTIYEAR

(Dollars in Millions)

- FY 1982 MULTIYEAR CANDIDATE
- EVALUATION

REQUIREMENT STABILITY	LOW RISK
FUNDING STABILITY	LOW RISK
CONFIGURATION STABILITY	LOW RISK
COST CONFIDENCE	LOW RISK
ADEQUATE LEAD TIME	LOW RISK

• ANNUAL PROGRAM COST	$3353.9
• MULTIYEAR PROGRAM COST	$3094.4
• THEN YEAR SAVINGS	$ 259.5
• SAVINGS IN CONSTANT 82 $	$ 155.5
• SAVINGS DISCOUNTED 10%	$ 53.0
• SAVINGS DISCOUNTED 13.9%	$ 92.0

4377-2

Now if we look at the next chart, in which again I have used the F-16 as an example. In my statement I have talked about six criteria for selection. I have mentioned five on the chart. I think the GAO, when they testified before your committee, talked about these criteria. They are in your report of last year, Mr. Chairman. We evaluate each of the proposals based on these criteria, and try to judge whether there is low risk, moderate risk or high risk before we embark on a multiyear.

We also look at the annual program cost, the multiyear program cost, and the then-year savings. Now, then-year savings on the F-16 were $259.5 million. That is computed on the dollars that you would look at in the budget. It was the 1982 dollars, 1983 dollars, 1984 dollars, and 1985 dollars.

We also then discount these dollars to constant dollars. The constant dollar savings for the F-16 would be $155.5 million, and then

we discount 10 percent. OMB Circular A-94 says money has time value, and since you are spending more early on multiyear, we discount by 10 percent, a standard OMB procedure. Then the savings discounted at 10 percent, a very conservative way of doing it I should emphasize, would turn out to be $53 million.

[Chart 4.]

COMPARISON OF DOD AND GAO EVALUATION OF MULTIYEAR CANDIDATES

(Dollars in Millions)

	ANNUAL CONTRACT AMOUNT	MULTIYEAR CONTRACT AMOUNT	THEN YEAR AMOUNT	SAVINGS %	10% DISCOUNTED SAVINGS (A-94)	13.9% DISCOUNTED SAVINGS (GAO)
DOD FY 83 CANDIDATES	12,910.8	11,594.9	1,315.9	10.2	222.3	358.1
LESS						
UH 60 ENGINE	302.8	287.9	14.9	4.9	5.2	6.7
KC 10	3,896.0	3,238.0	658.0	16.9	110.7	180.3
PLUS						
NAVSTAR	1,620.0	1,407.8	212.2	13.1	-4.6	21.9
ALQ 136	121.8	83.6	38.2	31.4	20.7	23.9
GAO EVALUATED PROGRAMS	10,453.8	9,560.4	893.4	8.5	122.5	216.9

NOTE: FOUR PROGRAMS HAVE ESTIMATED COSTS THAT HAVE BEEN REVISED SINCE THE DATA WAS PROVIDED TO GAO FOR EVALUATION.

43772

The GAO has proposed rather than converting to constant dollars, and then discounting 10 percent, they have used the total discount factor of 13.9 percent. This number could change, of course. If you use the 13.9 percent, you get a $92 million saving.

The important point to notice is that if we go to constant dollars, and then if we discount 10 percent for the time value of money, we should definitely show a positive number. We want that number to be positive.

[Chart 5.]

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COMPARISON OF SAVINGS ON FY 1983 MULTIYEAR CANDIDATES USING OMB CIRCULAR A-94 AND GAO METHODS

(Dollars in Millions)

	THEN YEAR SAVINGS	CONSTANT 82 DOLLAR SAVINGS	10% DISCOUNTED SAVINGS (A-94)	13.9% DISCOUNTED SAVINGS (GAO)
CH-53E	92.8	53.3	22.7	32.3
MLRS	193.4	92.2	13.7	29.5
SM-1	62.7	33.9	9.8	17.3
EA-6B	38.5	22.3	9.0	13.2
A6E	50.7	26.0	6.7	12.0
NATO SEASPARROW	37.0	25.5	14.0	17.2
MULE	5.5	3.5	1.8	2.5
TAO	75.0	41.6	12.2	19.9
MK-46	38.1	23.9	11.3	16.2
DMSP	49.3	25.5	5.2	11.0
UH-60A ENGINES	14.9	10.1	5.2	6.7
KC-10	658.0	360.9	110.7	180.3
TOTALS	1,315.9	718.7	222.3	358.1

4377-2

Turning to the last chart, you see on the last chart the systems that we are proposing for 1983, including the KC–10. The first column is the then-year savings and then-year dollars of $1.3 billion. The next column is the constant 1982 dollar savings of $718.7 million, and we give them for each of the systems.

The third column is the A–94 procedure, that is, taking the constant dollars and discounting 10 percent. And the last column is what the GAO has done using a 13.9 percent discount rate. We look at the services' submissions and make sure the data is of good budget quality. We then convert to constant dollars, and discount by the 10 percent rate, before we decide on whether we should have a multiyear contract or not. The above was the criterion we used when we submitted the 1983 budget.

One of the last comments I might make, in your report last year you said we should report on major weapons systems as defined by the DSARC. In this summary of 12 items there are only two that might be called major. One is a DSARC system, the other is a SAR system, but we have chosen to give you all the multiyear candidates that have economic order quantity implications.

This is a very quick summary of my statement, Mr. Chairman, and I will be happy to answer questions now.

Mr. ADDABBO. We have the statements of the various representatives of the services which will be made part of the record. Most of what they have in the statements will be answered by the questions of the Committee and those questions will be placed in the record.

[The statements follow:]

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STATEMENT OF MR. GEORGE E. DAUSMAN, DEPUTY FOR MATERIEL ACQUISITION MANAGEMENT OFC

Mr. Chairman and members of the committee:

It is my pleasure to appear before you today and report on the status of the Army's Multiyear Program. I will speak briefly of our multiyear contracts under prior authority ($5 million cancellation ceiling) and our progress in identifying programs for multiyear contracting using the expanded authority of the FY 82 Authorization Act. Also with me today are Army program representatives who will provide detailed information concerning the programs which require your approval for use of multiyear contracts.

The Army has awarded multiyear contracts (MYC's) on a routine basis in the past. During the five year period prior to passage of the FY 82 DOD Authorization Act, Public Law (PL) 97-86, we awarded 74 MYC's with a total value of $2.8 billion and estimated savings of $234 million. On 31 May 1982, we had 36 active MYC's with a $1.5 billion contract value and estimated savings of $143 million. These contracts were for non-major programs components and equipment due to the previous limitation of the $5 million cancellation ceiling. Enactment of PL 97-86 increased that limitation to $100 million which was sufficient to include major programs. We now have one major program under multiyear contract. This was a three year contract awarded in April 1982 for the Black Hawk (Airframe).

We have included three multiyear programs in the FY 83 budget. They are the Multiple Launch Rocket System (MLRS), the Black Hawk (engine), and the ALQ-136 Radar Jammer. All three of these candidates will take advantage of cost avoidance through use of expanded advance procurement. The Black Hawk (engine) and MLRS contracts are scheduled to be awarded in FY 83. The ALQ-136 contract is scheduled to be awarded in September 1982. No additional FY 82 funds are required to execute the ALQ-136 contract. All these contracts will be fixed price.

In the case of the T-700 engine, initial contract discussions with the engine manufacturer have suggested there may be additional opportunities for savings beyond those outlined in the budget. As you may be aware, the Army is the procuring agency within defense for the T-700 engine and its derivatives. These derivative engines include the T-701 and 401 which power helicopters used by all three services. These engines have a commonality of parts in excess of 90 percent. It appears it may be prudent to include the T-701 and 401 along with the T-700 in a multiyear contract to maximize the government's savings. We intend to solicit a multiyear proposal addressing all engines. We will of course provide the results of our negotiations, including estimated savings, to Congress for approval prior to contract award.

The three FY 83 Army multiyear candidates I just mentioned will provide significant savings for the government. The experience we have gained in preparing these programs for multiyear has been applied to other Army programs to determine whether they also offer significant savings. The CH-47D modernization program has been identified as an excellent candidate. Negotiations with the contractor are currently on-going to determine if the estimated multiyear savings can be realistically obtained. Should the negotiated position support the Army's estimate we will be seeking OSD and congressional support to initiate the contract in FY 83. No additional FY 83 funds would be required to execute a CH-47D multiyear contract.

We are continuing to review requirements for components to be used for spares as candidates for multiyear contracts. While no multiyear contracts for spares have been included in the FY 83 budget, we will consider that option if candidates are identified which would provide significant savings without undue risk.

Unless you have questions, I would now like to introduce Mr. Seggel, Acting Program Manager of the MLRS, to describe his proposed multiyear program.

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STATEMENT OF

REAR ADMIRAL RICHARD A. MILLER, U.S. NAVY

Mr. Chairman and members of the Committee. I appreciate the opportunity to present the Department of the Navy's FY 1983 multiyear procurement candidates. Accompanying me is Rear Admiral Sansone who is the Deputy Chief of the Naval Material for Contracts and Business Management.

As reflected in the FY 1983 budget, the Navy has made substantial progress in implementing multiyear procurement (MYP). Since issuance of the SECDEF multiyear policy memorandum on 1 May, the Navy examined a total of 70 programs to determine whether or not they were susceptible to multiyear contracting. This list has been reduced to a total of eight FY 1983 programs on the basis of a rigorous screening process which deleted the programs which did not currently meet the MYP criteria of stability and cost confidence. These eight, when added with the C-2A which the Congress approved in FY 1982, will bring the total number of Navy programs utilizing the new expanded multiyear contracting techniques to nine systems. Incidentally, the majority of the programs that did not meet the multiyear contracting criteria failed due to either inadequate time to fully develop accurate cost estimates or a lack of configuration stability.

The eight Navy programs that survived this screening process are:

STANDARD MR (SM-1) Missile
MK-46 Torpedoes
MULE Laser Designators
NATO SEA SPARROW ORDALT Kits
TAO Fleet Oiler
A-6E Intruder
EA-6B Prowler
CH-53E Super Stallion

This list of programs can also be subdivided into two broad categories. The first of these are the programs for which the FY 1982/83 funds will be used to procure end items from a multiyear contract. These programs are:

STANDARD MR
MK-46 Torpedoes
MULE
NATO SEA SPARROW
TAO Fleet Oiler

In the second category the requested FY 1983 funds are for advance procurement of components that will be utilized for end items that will be procured under a multiyear contract in fiscal years FY 1984-88. These programs are:

A-6E
EA-6B
CH-53E

In sum these eight MYC are projected to save a total of approximately $400M over the span of the contracts. Approximately $248 million has been included in the FY 1983 budget to cover start-up and economic order quantities associated with the multiyear contract. Cost savings from these contracts are a result of funding economic order quantities of components, maintaining efficient production rates, achieving manufacturing efficiences and escalation avoidance. All of the planned multiyear contracts are envisioned to be fixed-price type contracts with economic price adjustment clauses and accelerated progress payments to provide proper protection to the contractors and the Government.

It should be noted that none of the Navy's proposed multiyear programs fit the current criteria for a "Major" program. Accordingly, budget justification material was not included in the regular narrative justification material.

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The TAO is an excellent candidate for multiyear procurement since the ship does not include complex electronics and weapons. Ship design was completed in November 1981 so there is a stable configuration. The requirements are firm with the FY 1982 ship appropriated, the FY 1983 ship in the budget and three ships planned for procurement in FY 1984. Additionally, the Navy has a moderate to high degree of confidence in the cost estimates based on a firm design and informal industry feedback. Most importantly, the Navy plans to make this a competitive multiyear award which should further help to firm up cost estimates and further increase the cost benefit of the multiyear contract.

A-6E - The A-6E is a long-range all-weather carrier-based attack aircraft capable of delivering a large payload of weapons with a high degree of accuracy. This is the first of the requested multiyears where the funding for end items from the multiyear is to start in FY 1984. The FY 1983 budget, however, contains advance procurement funds which are applicable to all 44 aircraft in the planned FY 1984-87 multiyear contract. It is estimated that this multiyear will result in total program savings of $50.7M or 8% when compared with annual procurements.

The A-6E fully meets the criteria for multiyear procurement. The A-6E was first procured in FY 1969 and known updates have been incorporated in the FY 1983 aircraft. Additionally, due to the long production run, there is a high degree of confidence in both the contractor capability and the cost estimates.

EA-6B - The EA-6B is a four-place twin-engine electronic warfare derivative of the A-6E attack aircraft, which is equipped with high powered electronic surveillance and jamming equipment. The planned EA-6B multiyear is identical with the A-6E plan in that the multiyear program will start with FY 1983 advance procurement funds. The planned scope of the multiyear contract is for 24 aircraft to be procured over the FY 1984-87 time frame. Current estimated savings are $38.5M or 8% when compared with annual buys.

CH-53E - The CH-53E is a three-engine heavy-lift helicopter used by both the Navy and Marine Corps. The planned multiyear covers a total of 61 aircraft which are planned for procurement in FY 1984 through FY 1988. Total program cost savings of $92.8M are projected.

The CH-53E has been in production since FY 1977 and is now a technically mature system. Cost confidence in the CH-53E is moderate to high. Although this program has suffered underestimates in the past, this degree of confidence is warranted because the FY 1983 estimate is based on actual costs of early production aircraft. I am also confident that before next year, when we request funding for production of the first eight aircraft under the MYP, the degree of cost confidence will be high because cost data for later production aircraft will be available.

Mr. Chairman, that completes my statement on the Navy's FY 1983 multiyear procurement candidates. I will be happy to respond to your questions.

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The Department, however, on 22 April submitted complete multiyear justification material which specifically responds to the committee's concerns as expressed in its report number 97-333 of 16 November 1981. This material was provided to give the committee a better understanding of the benefits of the new form of multiyear contracting on Navy programs. I would now like to briefly discuss each of the planned multiyear contracts.

STANDARD MR (SM-1) - The standard MR is a medium range surface-to-air missile which is used on the FFG and DDG Class ships. The planned multiyear contract covers a total of 3,450 missile Guidance and Control Sections to be procured over the FY 1983-87 time frame. It is estimated that this MYC will result in total program savings of $62.7 million or approximately 9% over the cost of business as usual.

Standard MR is an outstanding candidate for MYC since the programs requirements and configuration are remarkably stable. Additionally, the Navy has a high degree of cost confidence since standard missiles have been in production for 14 years with the current block model in production for three years.

MK-46 Torpedoes - The MK-46 Torpedo is a conventional light weight torpedo designed for launch from surface ships and aircraft. The planned program is a three-year multiyear contract covering FY 1983-85 for a total of 3,250 torpedoes. It is estimated that this MYP will result in savings of $38.1 million or approximately 5% over cost of business as usual.

The MK-46 is a solid program which meets all established criteria for MYP. The current version of the MK-46 has been in production for six years. Requirements and configuration are stable. Additionally, due to the prior production contracts covering a total of 4,700 units, there is a high degree of cost confidence.

Modular Universal Laser Equipment (MULE) AN/PAQ-3 - MULE is a man-packed laser device designed to provide forward observers the capability to accurately determine location and range of targets for attack by tracker equipped aircraft. The requested multiyear contracts cover all three major components of the system - the Laser Direction Range Finder, the Stabilized Tracking Tripod Module, and the North Finding Module. The total planned MYP covers a total of 340 units over the FY 1983-85 time frame. Total savings are estimated to be $5.5 million or 6% over the cost of business as usual.

NATO SEA SPARROW ORDALT Kits - In this case we are utilizing MYP to modify a system currently in use in the fleet. The current NATO SEA SPARROW launcher is compatible with the RIM-7H missile. However, starting in FY 1983 the RIM-7M missile will be introduced to the fleet. In order to make the current NATO SEA SPARROW launchers compatible with the 7M version, a significant modification to the current system is necessary. It is this modification package that we propose to procure with a multiyear contract.

The planned scope of the program is to procure a total of 67 ORDALT Kits over a five-year period. It is estimated that use of a multiyear contract, for this procurement, will result in total program savings of $37.0M or 29% when compared with the projected costs for annual contracts.

Since this modification incorporates proven changes to already acquired launchers, the stability of the requirement is fixed. Additionally, cost confidence is high due to the low complexity of the change and contractor familiarity with the basic system.

TAO Fleet Oiler - The TAO is a 180,000 barrel capacity fleet oiler with a 665 ft. length, 93.5 ft. beam, and 35 ft maximum draft. The planned multiyear contract is for a total of five ships FY 1982 through 1984. It is estimated that this multiyear program will result in savings of approximately $75.0M or 7% over the projected costs of annual contracts.

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STATEMENT OF: BRIGADIER GENERAL GORDON E. FORNELL

ON F-16

During the FY 82 budget deliberations the Department of Defense recommended to Congress that the F-16 be procured on a four year Multiyear Procurement running from FY 82 through FY 85. The proposed Multiyear Procurement would buy 120 aircraft per year for a total of 480 aircraft.

The F-16 Multiyear Procurement was approved by Congress and an additional $283M was required in FY 82 TOA to fund the termination liability associated with the advance buy economic order quantities. The total savings projected for the four year procurement is $260M using the January 1982 OSD inflation rates. The majority of these savings are the result of economic ordering quantities with subcontract vendors, but there are also savings associated with factory efficiencies, engineering and acquisition of support equipment.

In order to protect the multiyear savings pending the approval of the FY 82 Authorization and Appropriation Bills, the Air Force issued a three month economic order quantity (EOQ) contract in Dec 81 for $29.5M. These funds covered termination liability funding for this limited multiyear start. Following the FY 82 Appropriation Bill, this limited EOQ contract was expanded to a multiyear advance buy contract worth $510M which covers all termination liability through October 1982 for the 480 aircraft (FY 82-FY 85).

General Dynamics, the F-16 prime contractor, submitted a firm proposal on 27 May 82 for this Multiyear Program and we anticipate a signed multiyear contract in January 1983. Negotiations are not yet complete, but based on the General Dynamics proposal, the Air Force is confident we will realize the projected savings.

Mr. Chairman, this concludes my proposed statements. I will be happy to answer any questions you may have.

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STATEMENT OF: BRIGADIER GENERAL GORDON E. FORNELL

ON KC-10

MR CHAIRMAN AND MEMBERS OF THE COMMITTEE.

I appreciate the opportunity to discuss with you the proposed multiyear procurement of the KC-10. The proposal provides the most cost effective and efficient method for procuring these vitally needed mobility assets.

When the program submitted in the President's Budget proved to be non-executable, we attempted to formulate an alternative that would be acceptable to the contractor; that would retain the excellent prices of the current contract; and that would remain as close to the requested yearly TOA amounts as possible. With regard to the first requirement, the Air Force will be the only customer on the DC/KC-10 production line after November. In order to maintain an economically viable production rate, the contractor must establish a delivery schedule that will prevent long gaps in the line. This requirement helped drive the alternative to a multiyear procurement. The second requirement was met by the multiyear proposal as the price structure of the current contract was retained with only a minimal airframe base price increase made to compensate for general airframe changes made since 1977. Finally, the overall TOA was reduced by $215 million from that of the President's Budget although increases in annual TOA in FY 84 and 85 were required.

Your support of the multiyear package will ensure that the required KC-10s will be delivered at the earliest possible time to alleviate near term mobility shortfalls; that the aircraft will be procured at the minimum cost to the taxpayers; and that Douglas Aircraft, one of the nation's two wide-bodied aircraft producers, will remain viable to provide a continuing competitive environment.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions you may have.

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STATEMENT OF: BRIGADIER GENERAL BERNARD P. RANDOLPH

ON GLOBAL POSITIONING SYSTEM

Mr. Chairman and Members of the Committee:

The NAVSTAR Global Positioning System, or GPS, multiyear procurement was reviewed by your Committee during the reprogramming hearings.

Briefly, as you recall, Sir, the system consists of three segments, the user segment, the control segment and the space segment. The Multiyear procurement is for the space segment.

GPS is a war fighting system. It helps to enable ships, aircraft, and land units to destroy targets anywhere in the world with fewer losses. Our analysis of a 30-day European type conflict shows that GPS would provide a 50 percent improvement in target kill capability in battlefield interdiction and close air support.

The test program to date has been excellent. We have five satellites on orbit right now which have consistently demonstrated better than 16 meter accuracy. We are also able to measure velocity to within a tenth of a meter per second thus we are doing a factor of ten better than any navigation system that exists today.

The OSD Director of Test and Evaluation noted at the DSARC that GPS is one of the best tested programs he had seen. The design is stable and we currently have 11 satellite years of uninterrupted service on orbit. The only problem to date was premature failure of the clocks early on in the program. The problem has since been fixed and the clocks are now working perfectly.

The GPS cost history has been outstanding. We have brought the satellite program in within seven percent of predicted costs. The five-year cost for the entire GPS program, that is to fully deploy 18 GPS spacecraft with the Integrated Operational Nudet Detection payload, the control segment, plus 5,000 user sets to go in the aircraft, ships, and ground vehicles, comes to $3.2 billion. The shuttle launch costs are not included.

The approach we agreed to earlier this year, which was also accepted by the other Committees, was to use a block buy contract beginning in FY 1982, to procure 28 spacecraft for about $1.4 billion through FY 1989. Per our agreement we plan to structure the contract to fully fund satellites beginning in FY 1984 and through the remainder of the program. Specifically, the contract will fully fund one satellite in fiscal 1984, six in 1985, nine in 1986, eight in 1987, and four in 1988, to complete the buy.

In the early years, the contract would procure parts, and manufacture subassemblies and structures at economic rates to yield over $200 million in savings compared to an annual buy approach. The program can, of course, be terminated at any time by the Congress and the number of spacecraft bought up to that time will be delivered. Thus, this approach does not commit future Congresses, nor does it in any way commit dollars to the program beyond the year in which funds have been appropriated.

In addition to the dollar savings, efficiencies associated with the block buy help attain our goal of having an 18 satellite system on orbit by 1988. Sir, this concludes my comments on GPS.

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STATEMENT OF: BRIGADIER GENERAL BERNARD P. RANDOLPH

ON DEFENSE METEOROLOGICAL SATELLITE PROGRAM SPACECRAFT

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to present the planned multiyear procurement action for the Defense Meteorological Satellite Program (DMSP) for your consideration. DMSP is an operational satellite system that provides, through all levels of conflict, global cloud data and other specialized meteorological, oceanographic, and solar-geophysical data required to support both worldwide DOD operations and other high priority programs.

The Air Force proposes to initiate a multiyear procurement of 4 DMSP spacecraft and primary sensors in FY 83 with a total contract price of $245.6 million. Required funding for these contracts will be $149.0 million in FY 83 with the remaining $96.6 million in FY 85. This will result in a cost avoidance of $49.3 million over annual buy contracts, or a 16.7% savings.

MISSION EFFECTIVENESS. If the proposed multiyear contract is not approved and annual fully funded contracts with similar funding must be negotiated, resulting delays in spacecraft delivery will range from 6 months to 1 year. In the late 80s, these delays will decrease the probability of maintaining the required spacecraft in orbit from 85% to 70%.

COST EFFECTIVENESS. A major part of the multiyear procurement savings, $39.4 million, results from purchase of parts and selected subassemblies in economic order quantities. With this approach, all parts required for the four primary sensors and spacecraft will be ordered during the first year, rather than four separate orders spread over four years. Savings result from lower prices for larger quantities and by avoiding gaps in the vendor's production capability which allows the production of the required parts at stable prices. The remaining $9.9 million of the multiyear procurement savings results from decreased labor costs in the testing of parts and subassemblies. If a worker has one test to run on one part or subassembly, it takes a finite amount of time to set up the test, run the test, and then tear down the test. Under the multiyear procurement approach, the test set up and tear down will be accomplished only once for most parts and subassemblies.

LOW RISK ASSESSMENT. For the following reasons, there is a low risk that program changes will occur to interrupt the procurement buy and operation of the spacecraft being acquired by this action.

- Program requirements are well established and stable. The requirement for operational satellites on orbit has persisted for 15 years and was revalidated by the Joint Chiefs of Staff on 5 Oct 81. No change is expected during the contract period.

- The risk of funding instability is low. Requirements for FY 1983-1987 are firmly identified. The multiyear proposal is based on program office and contractor estimates. Both the program office and the contractor have a good understanding of required funding based on the Block 5D-2 DMSP satellite cost history from 1975 to the present.

- The risk of configuration change is low. The four spacecraft to be procured through this action will be of the block 5D-2 configuration now in use. Their configuration will be substantially the same as the five previous Block 5D-2 satellites that have been procured.

- The risk of contractor failures is low. The contractors, RCA and Westinghouse, have successfully demonstrated their capability in 15 years of manufacturing the DMSP spacecraft and primary payloads.

- Finally, the probability of the DMSP being continued as an Air Force program is very high. The DMSP maintained a high priority during the FY 83 budget reviews and received a high priority in the FY 84 reviews.

In summary, the DMSP multiyear procurement will enhance mission effectiveness, is cost effective, and has a low risk of failure. I strongly urge your favorable consideration of our request to proceed with the multiyear procurement of four DMSP satellites and four primary sensors.

Mr. Chairman, this concludes my prepared statement. I will be happy to respond to any questions you may have.

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MULTIYEAR PROCUREMENT CRITERIA

Mr. ADDABBO. As you know, Dr. Borsting, the committee had a hearing with GAO to discuss both the possible savings or lack of real savings with the multiyear procurements. Under the Public Law 97-86 there were six criteria necessary for approving a multiyear contract, and you say that these criteria were used. These criteria have always been very broad. Has DOD established internal directives, so the broad criteria would become more easily followed by the services?

Were any specific requirements or directives issued by the DOD, or were the services just left to float by themselves using the six criteria?

Dr. BORSTING. No, there were some specific directions issued. Also, my staff and Bill Long's staff worked in detail with the services. The services submitted many systems as multiyear candidates, and quite a few of them were rejected by my office, and in the end by Mr. Carlucci.

We had what we call a program decision document last year which we used to prepare the 1983 budget. One of those documents was a multiyear document in which all multiyear systems were approved or rejected. For example, we felt that several of the systems which were submitted, didn't have sufficient documentation so we sent them back to the services. They submitted more documentation, and then we either approved or rejected them.

DOD AND DEPARTMENTAL REVIEWS OF MULTIYEAR CANDIDATES

Mr. ADDABBO. Admiral Miller, we understand the Navy had many multiyear proposals within the various divisions, and then you narrowed them down. What criteria did you use as far as narrowing the proposals which you then submitted to Dr. Borsting's office?

Admiral MILLER. We had 70 candidates that we looked at. We narrowed this down to a list of 8 for 1983. The criteria that we used were principally the stability of the program in terms of whether the particular system was mature in its design; the stability of the program with regard to whether we felt confident we knew how many of the systems we were going to buy and whether we had the requirement nailed down; and then the other principal criteria that we used was the question of how confident we were of the cost. Associated with that, of course, was how confident were we of the contractor, or the contractor that we were looking at, to fulfill the multiyear provisions of the contract. So these basically were the criteria that we looked at, and these were provided to us as guidelines by the Office of Secretary of Defense.

Mr. ADDABBO. And so out of the 70, you submitted 8 to Dr. Borsting's office?

Admiral MILLER. Yes, sir.

Mr. ADDABBO. Dr. Borsting, then it came to your office for review. If we look at your last chart, No. 5, where you listed about 12 items for multiyear, 8 of those 12 are Navy. Did you then take the Navy's request at face value or did you also review and find, compared to the other services, the Navy did the best review and therefore their entire 8 programs were approved?

Dr. BORSTING. My recollection may be slightly different from Admiral Miller. I think, on the PBDs, Dick, we actually turned back some of the Navy's initial recommendations last fall.

Admiral MILLER. Yes, sir. If I left the impression that that was all we submitted to you, that was my mistake. We started with 70, of which we had about 15, I believe, that we submitted to Dr. Borsting's office, of which 8 were ultimately approved.

Dr. BORSTING. And some of the 8 that were approved were sent back for more justification to Admiral Miller's office.

Admiral MILLER. Yes, sir.

I would like to emphasize that point, Mr. Chairman. I know this committee feels very strongly that we should go at a prudent pace in multiyear, and have multiyear contracts that make sense and have real savings. I think my office and Mr. Weinberger's office completely agrees with that.

We want to proceed with multiyear, but we want to do it in a very prudent way, so that we are sure that we are going to get savings out of the multiyear concept.

PRIORITIZATION OF MULTIYEAR PROPOSALS

Mr. ADDABBO. In their testimony before the committee, GAO testified that they believed the Defense Department did not actually prioritize the proposed fiscal year 1983 multiyear candidates either against each other or against other non-selected programs. First of all, have you seen the GAO study?

Dr. BORSTING. I have talked to people about it, but haven't read the detailed study. I talked to people about their testimony before your committee, and I have seen the formal testimony. As to the latter statement, I think we have talked about how the services selected their candidates—they scrub, we scrub.

I don't think I can say any more. We have gone through a stringent process, and the Congress provides another screening which you are doing right now.

Mr. ADDABBO. If the committee would only appropriate funds for, say, four of the candidates, would the other systems continue under an annual buy, or would you then start cutting back on those?

Dr. BORSTING. You would have to look at each individually. It would be my opinion that all the systems would continue.

LITTLE CONFIDENCE IN PREDICTED SAVINGS

Mr. ADDABBO. GAO has stated that it has little or no confidence in the savings Defense estimates that you will achieve by using multiyear contracts for the fiscal year 1983 programs because the estimates are based on what they call "soft" budgetary data. You have not addressed this issue in your statement, and you speak of the claimed savings. GAO believes that, to be valid, savings estimates must be based on a comparison of firm proposals on both an annual and multiyear basis. What is your comment on that?

Dr. BORSTING. It would certainly be nice to be able to do that. I think the GAO may have been saying that these numbers were soft or something like this. We would have to go out to the contractors 18 months to 2 years ahead of time, and get firm bids on things

that weren't approved by the Congress at that time. We just don't do that, normally.

These are budget quality estimates. They are the same quality, in fact, probably better quality, than some of the other budget estimates you receive. We work with the program managers, getting their data and also talk to the contractors. We use equivalent systems. We use all the tools that the normal budget process does to make estimates, and I think at this stage that is what should be done.

Let me emphasize one thing. We would, of course, not contract unless we had those proposals, and we may decide, based on the firm proposals, not to go multiyear. If the firm proposals do not result in good savings, we would not go multiyear.

Now, in the new directive that will be coming out, we will be directing the services to give us information, for example, on discounting. We would want the firm contract to be discounted, using the rule of A-94 that I discussed before, in going to constant dollars, and then discounting 10 percent. We would want services to do that computation, and put in their files and send us a copy of that before they went to contract.

Mr. ADDABBO. As you pointed out, the GAO mentioned the possibility of obtaining authority, so that you could get the two proposals, multiyear and annual programs, to set some basis for whether you have savings or not.

In reading from a letter dated April 22 from the Department of the Navy, Office of the Secretary, even here the savings were revised. In February 1982 the Navy showed a possible savings of $316.3 million on the Standard Missile MR, the EA-6B, the A-6E, NATO Sea Sparrow, the Mule, TAO, MK-46 Torpedo, and CH-53 Helicopter, and then—this is a February 1982 calculation—then we had a current calculation on April 22, 1982, and now the alleged savings is $407 million.

This was in April. It is now July. Do we have another further revision?

Dr. BORSTING. I am sure there will be further revision. This is a normal process as we get better data we update our estimate. You propose things very early, and then as you go down the road and get better data, you update.

Mr. ADDABBO. Dr. Borsting, what happened from February to April?

Dr. BORSTING. This isn't unique to multiyear, it is true of all systems.

Mr. ADDABBO. I agree with you, but, again, multiyear puts us into a different category, with possible long-reaching penalties, dollars which we cannot spare. Maybe we are going down the wrong road. That is why I fought the bill originally and said we should have only one or two test cases because I knew we would see the proliferation which we are seeing now.

As Admiral Miller pointed out, he had 70 requests, every Member of Congress who has a defense contractor in his district, will be faced with multiyear procurement requests. And those are, as you pointed out, because it is multiyear, front loaded. Those dollars have to come from other programs, and I am just wondering how soft these figures are.

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We saw changes in just three months, from February to April. Now you say here we are in July and there is further updating. How do we get some firm figures to know whether or not we should really be looking at multiyear for these 12 programs?

Dr. BORSTING. The basic answer to that is we give you the best budget quality estimate we can, and I think there will be continual updating, but we will not go to contract unless we have demonstrated savings. In other words, even if you give us the authority to go multiyear, and if we don't demonstrate savings at contract time, we will not go to contract. And the proof of the pudding is going to be in the firm fixed price contract or fixed price incentive contract that we have, once we have that proposal.

Mr. ADDABBO. If the committee should approve the 12 multiyear programs that you have requested give you the front-loaded money, and then in scrubbing the figures and contracts you find that it is not ready for multiyear, what happens to those funds? Are they specifically earmarked for those programs? Will they just go into unobligated funds? Will they be turned back?

Dr. BORSTING. Well, we would have some additional funds that would be in the EOQ portion, for example, and certainly we would work with your committee on reprogramming or some other use of those funds.

Mr. ADDABBO. But they would be special interest funds controlled by this committee?

Dr. BORSTING. Oh, yes.

Mr. ADDABBO. The gentleman from Alabama.

DOD DISCOUNTING PROCEDURES

Mr. EDWARDS. Thank you, Mr. Chairman.

On page 4, of your charts, you show two columns, one, 10 percent discount, which you say you take, and 13.9 percent discount, which you say GAO thinks you ought to take, if I understand what you are saying correctly.

We have been told by GAO that on the 12 candidates for multiyear, that if you properly discount, the $879 million in savings that you show would shrink to $186 million, but I confess I am not clear as to whether they are trying to show us the difference between a 10 percent discount, a 13.9 percent, or whether they don't give you any credit at all for discounting. Can you clear that up?

Dr. BORSTING. There are various ways of doing this.

Mr. EDWARDS. We are learning that every day.

Dr. BORSTING. Let me clear it up in a couple of ways. GAO didn't go with constant dollars. They just discounted the outlay stream with 13.9 percent.

Mr. EDWARDS. So when I come back in the next life I am going to insist that all of you talk in the same terms all the time, and I am going to decree that nobody can be allowed to talk in anything except the one term. I think that is where we all stay totally confused.

Now, go ahead.

Dr. BORSTING. I won't discount that remark.

Mr. EDWARDS. I will be very powerful when I come back.

Dr. BORSTING. GAO cranks in inflation and the time value of money into their 13.9 percent, and I guess they are getting this from what interest rates are yielding now. That is, I think, the way they are doing it. We are using a much more conservative way by going back to constant dollars, and then discounting at 10 percent.

In constant terms, that 10 percent discount is very high, and the value of money has been more like three or four percent after inflation, in the past, so that is a very high discount rate. It is more conservative than GAO. Now we have used this and we want this to be positive.

We have presented our savings to you in then-year savings, then-year dollars, which the GAO has criticized, but then-year dollars is what you have in the budget, and when we send a 5-year budget over, we send it in then-year dollars. So I don't think that it is a fair criticism from GAO, when we also do a more conservative approach using constant dollars and then discounting by 10 percent.

So the percentage discount, Mr. Edwards, is on a different basis. They have discounted the then-year outlay stream, 13.9 percent. We have taken the constant dollar outlay streams and discounted those 10 percent, so they are different bases of discount.

Mr. EDWARDS. With all those computers you have over there, is there anybody who can punch all those numbers in and come up with some comparison so we on this side of the table can understand who is comparing what?

Dr. BORSTING. We have these numbers here in a chart which I would be happy to give you. The GAO didn't include the UH-60 engine and the KC-10; but they had Navstar and an ALQ-136. What I have done is in the GAO evaluated programs—and I can give this to you right now—I have given you our 10 percent discounted savings, the then-year amounts, and I think they will be fairly close to the GAO, so we are not really too far apart.

TAO MULTIYEAR PROCUREMENT

Mr. EDWARDS. Dr. Borsting, you and Admiral Miller both state that the TAO oiler is an excellent candidate for multiyear procurement. That is on your chart that we have just been talking about. You go on to say that "The ship design was completed in November 1981, so that it has a stable configuration."

In the supplemental hearings earlier this year, it is my recollection that we were told that the design agent for the TAO was told to stop work in October of 1981 with approximately three months yet to go on completion, and so I am a little confused. Can you clear that up or Admiral Miller?

Admiral MILLER. I am going to have to say that I am not familiar with the particular stop work order that you are talking about. I do know that we have the design far enough along that we are planning on making the award of this contract around December of this year. After we get the budget and know exactly where we stand on the multiyear contract authority, we would use the fiscal year 1982 authorized ship, the first ship in a 5-ship multiyear contract. I have had no report that we are in any jeopardy of not having adequate design.

Mr. EDWARDS. I am looking at page 401 of our hearings, Part III, Supplemental Appropriations, 1982, and there is a question:

"Reportedly, the designer was relieved of his design assignment before it was completed, is this correct, and, if so, explain why the designer was relieved of the assignment."

The answer is, "The design agent for the TAO was told to stop work in October 1981, approximately three months prior to the completion date of the task. The general performance and responsiveness of the design agent were the principal reasons coupled with revision to the acquisition plan which modified major milestones. Based on the design agent's performance, the necessary milestones would not have been achieved * * *" and so forth.

Admiral MILLER. Yes, sir.

Mr. EDWARDS. You are not familiar with that?

Admiral MILLER. Well, yes, the fact that he was terminated in October of 1981. We picked up that design work, and the design work has continued, and, as I say, I have not had any reports to indicate that we are not going to make the contract awards that we have on schedule right now. I will provide additional information for the record as to exactly where we stand on the design, but, as I say, we are confident we are going to make our award date.

Mr. EDWARDS. Let us have some more information. That seems kind of hard to get from October–November with that language that was in the hearing record.

Admiral MILLER. Yes, sir.

[The information follows:]

Upon termination of the contract with the original design agent, the Navy proceeded to get a second design agent under contract. In the interim any slack in the design effort was picked up by the Navy's in-house engineering staff. The design effort has proceeded to schedule. The shipbuilding specifications and drawing reviews have been completed; the solicitations for price proposals are in process; and all milestones have been met to support the October 8, 1982 price proposal submission date.

Dr. BORSTING. Let me add a postscript to that. We would work with the Navy, and if things were not in a stable configuration, we would not want to award a multiyear.

Mr. EDWARDS. We keep hearing that. We want to believe it, but that is why we have these hearings, I suppose.

Admiral Miller, you also stated that the Navy has a moderate to high degree of confidence in the cost estimated based on a firm design and informal industry feedback. Isn't this a program that you requested $58 million in supplementals to cover cost growth?

Admiral MILLER. That is correct. That was cost growth that we did request, based on the escalation changes, and based on the contract price that we had put in the 1982 budget.

Mr. EDWARDS. According to your revised schedule, you are to have pricing proposals due from the contractors on October 8. Are you going to meet that deadline?

Admiral MILLER. I have with me the contracting deputy chief from NAVMAT, Admiral Sansone. I would like to ask him to answer that question for me.

Admiral SANSONE. The answer to the question is yes, we expect to meet that date in October.

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The request for proposals was out on the street in the February timeframe. We are into the receipt of proposal process at this time, looking for an award shortly after the new fiscal year begins, depending upon the committee's action on the multiyear for the TAO.

Mr. EDWARDS. You were to complete the responses to the contractor's Phase I questions on July 5th. Have you done that?

Admiral SANSONE. Yes sir.

Mr. EDWARDS. I understand that there were several thousand questions from contractors, and your statement is that you have in fact responded to all those questions?

Admiral SANSONE. To the best of my understanding, yes sir.

Mr. EDWARDS. Admiral Miller, in our shipbuilding hearings the Navy testified that "This procurement is not a multiyear concept. It is in fact an option procurement with advance procurement for materials." I am not quite sure I understand that. Is this in fact incrementally funding these ships?

Admiral MILLER. I will let Admiral Sansone tell you more details about how the contract will be handled.

Admiral SANSONE. No, sir, it will not be incrementally funded, as to my understanding. The contract will be structured in a classical multiyear way that we are talking about here before the committee. One little additional facet of that contract will be the exercise of options for bringing the follow-on years requirement for the fiscal year 1984 or for the fiscal year 1985, and we will do that through exercise of an option to bring that piece of the contract into existence.

[CLERK'S NOTE: In editing the transcript, Admiral Sansone changed his reply to read:]

No. Sir, it will not be incrementally funded, as to my understanding. The contract will utilize a multiyear approach that fully funds the fiscal year 1982 and 1983 ships and provides advance procurement multiyear funding for EOQ purchases for the three remaining ships in the five ship program. One additional facet of that contract will be the exercise of options for bringing on the follow-on fiscal year 1984 requirement of three ships.

Mr. EDWARDS. Admiral, in our shipbuilding hearings earlier this year, in May I guess, the question was asked: "Congressional Research Service also notes that the advantages of multiyear procurements have been more fully explored than the disadvantages. Identify and explain to what extent were they considered in deciding on the multiyear approach."

The answer was: "As previously pointed out, this procurement"—TAO—"is not a multiyear concept. It is in fact an option procurement with advanced procurement for materials."

Is there a distinction without a difference there? Should it be on this list of candidates?

Admiral SANSONE. Yes, sir, I am convinced it should be.

Mr. EDWARDS. Is that an erroneous comment?

Admiral SANSONE. I would have to understand what in total was said, sir, and be able to comment on it accordingly.

Mr. EDWARDS. I hope you will do that liberally for the record.

Admiral SANSONE. Aye, sir.

[The information follows:]

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The TAO ship program acquisition strategy combines the principles of the classic annual including options contract with the new advanced multiyear concept. The basic hulls for the TAO ships are being procured under the annual procedure, while a large portion of the installed equipment is being procured using the Economic Order Quantity (EOQ) principles under the umbrella of the multiyear authority enacted into law by the Fiscal Year 1982 Defense Appropriations Act.

As explained during the 31 March shipbuilding hearings, this combined approach does not fit precisely into either the annual or the advanced multiyear category. It is designed to produce the optimum amount of savings, while preserving the maximum amount of program flexibility, which is the sort of innovation encouraged under the advanced multiyear concepts. Accordingly, the Department has submitted it for the Committee's approval because of the Economic Order Quantity provisions.

Mr. EDWARDS. By providing the fund to procure materials well in advance, I would assume that you would save some money by purchasing sets of equipment for five ships. That is correct, isn't it?

Admiral SANSONE. Yes, sir.

Mr. EDWARDS. What percentage is that savings to the total cost of a five-ship buy?

Admiral MILLER. For the TAO we are saying that we are going to save 6.7 percent of the difference between multiyear contracting and the normal type of contracting. That comes to about $75 million worth of savings in that particular program of five ships.

Mr. EDWARDS. Mr. Magliocchetti has one point he wants to make here.

Mr. Magliocchetti. Admiral Miller, according to the April 22 memo, it states that the savings relating to economic order quantity purchases is estimated to be $6.7 million. We have been told in the past that the savings associated with economic order quantities, particularly in five ship sets of equipment, would be fairly high. The TAO total program cost is $1.1 billion, and here we are talking about a $6 million savings. Does that really go along with the economic savings that we were told we would be achieved? It seems like a very small amount, Admiral.

Admiral MILLER. That is correct, $6.7 million is the figure that we are showing. There is also additional savings for the manufacturing processing of $9 million, and in this particular case the majority of the savings in the TAO are for savings in escalation, so you are correct.

MULTIYEAR CRITERIA

Mr. EDWARDS. Dr. Borsting, on page 3 of your statement, you refer to the six criteria for selecting multiyear candidates this year. Just to put it all in one place in the record, benefit to the government, stability of requirement, stability of funding, stable configuration, degree of cost confidence, and degree of confidence in contractor capability. Have I stated those accurately?

Dr. BORSTING. Yes, you did.

Mr. EDWARDS. And then you say in your statement that "these criteria appear to be acceptable to the committee," and I think that is a fair statement. The committee, however, has continued to comment on the need to consider the industrial base, and in that context I think competition as legitimate criteria for multiyear. You are aware of that, aren't you?

Dr. BORSTING. Yes, I am.

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MULTIYEAR IMPACT ON THE INDUSTRIAL BASE/COMPETITION

Mr. EDWARDS. While you didn't list it as one of the criteria, I wish you would comment on the extent to which industrial base and/or competition is included in your consideration.

Dr. BORSTING. First, competition. We would strive to achieve competition anytime we can on the multiyear contract. If we are in a position to have competition, we would want it. There are some instances, however, where it is very difficult to have competition, and you would need to wait several years to have another contractor be able to do the work, so you just couldn't have competition. In general though, we would prefer competition.

With regard to the industrial base that you mention, it is very difficult to judge this early whether we really are improving the industrial base or not, because we are just starting in 1982 to consider the multiyear contracts. It is very early.

Mr. EDWARDS. Have you finished?

Dr. BORSTING. Yes.

Mr. EDWARDS. I was expecting more. You think, then, that those two items have not risen to the level of criteria?

Dr. BORSTING. Competition is a definite criteria when it is suitable. Now, with regard to the industrial base, I think we are all agreed in principle that multiyear procurement should improve the industrial base. Now the question is how do we really measure this. Certainly we must measure it over a period of time.

Mr. EDWARDS. But if in fact you have a legitimate candidate for multiyear, wouldn't it follow or shouldn't it follow that subcontractors that will be called on to gear up to carry out that multiyear contract will have greater tendency to come into the system and stay in it and be candidates for other contracts from time to time?

Dr. BORSTING. Certainly, this has been one of this committee's arguments, and one of our arguments. By introducing stability into the system, where the prime can plan for four years and the sub can plan to have a longer term contract, you will attract more subcontractors into the defense industry. Now, all I am saying is that it will take some time to verify that, because we just started multiyear contracting this year.

Mr. EDWARDS. If a potential multiyear contract failed to meet that test, would that be a sufficient reason for not going forward?

Dr. BORSTING. The test of improving the subcontractor base?

Mr. EDWARDS. The industrial base.

Dr. BORSTING. I am not really sure how we measure this when we are looking at a prime contractor. Bill would you like to add a comment or two here?

Mr. LONG. If we are looking at the vendors at various tiers, I think the instincts of this committee and the Department of Defense are that there will be a much broader range of vendors interested in participating in an economic order quantity for three or four years' requirements than for a series of annual requirements.

We know, and we can identify some specific instances, that the business community feels that the Department of Defense and other government agencies buy in such small lots and so many times that it is just not worth the aggravation and they will do their business elsewhere.

We think a natural effect of multiyear is going to be to draw some of these people in because they will set a line up once for a requirement rather than be called upon to set it up four or five times, depending upon the number of years involved.

In the context of measurement, we are barely into our first few multiyears, and we really can't measure the actual effect of the economic order quantity buying of components. When we will be able to measure it remains to be seen. I think if we are looking at criteria for approval or disapproval of a multiyear, I don't think that we would say, Gosh, this isn't going to contribute to the industrial base, and therefore we won't multiyear it, because you would almost implicitly be saying doing it another way would improve the industrial base, and I don't think that there is any evidence to demonstrate—in fact quite the contrary—that annual buying has a positive impact on the industrial base.

But I don't think it is something that, unless we had a very specific negative impact on industrial base—and I can't imagine what that would be—that we would use this as a criteria to disqualify a candidate program.

Mr. EDWARDS. I am sure that staff could ask these questions better than I have, and I want to put in the record some questions on this subject, and perhaps those questions will lead to further responses on this subject.

Thank you, Mr. Chairman.

[CLERK'S NOTE: Questions submitted by Mr. Edwards and the answers thereto follow:]

DEFENSE INDUSTRIAL BASE AND COMPETITION

Question. "The Committee directs that a full presentation of the benefits that will accrue to the Government be fully addressed, especially as they affect vendors, small suppliers, and subcontractors, by all accounts the weakest link in the defense industrial base. These materials should address efforts made to enhance competition through dual sourcing and other means. The record should also show how contractors have improved production facilities or instituted training programs for short supply, highly skilled trades, and the extent to which the prime contractor will flow down to subcontractors the benefits of MYC, such as timing of progress payments."—Fiscal year 1982 Defense Appropriations Act House Committee Report.

On page 3 of your statement, you conclude that the six criteria used by the Department to evaluate multiyear candidates "appear to be acceptable to the Committee." As a matter of fact, the Committee report was critical last year because the Department materials failed to address another criterion, possible benefits to the industrial base that might result from multiyear contracts. The same is true of your statement this year. Why does the Department fail consistently to address the one reason, other than savings, that was advanced as the prime justification for multiyear contracting? Shouldn't benefits to the industrial base be added to the Department's criteria for evaluating multiyear contracts? If not, why not?

Answer. We believe the potential benefits to the industrial base are inherent to the longer term contractual arrangement repre-

sented by multiyear. The selection of each and every candidate is, therefore, an affirmation of this belief. As we have previously stated, the larger benefits should accrue through the use of economic order quantity buying and we will be looking at this area more as the fiscal year 1982 multiyear programs mature.

Question. The GAO report states that because competition is a major factor for stimulating efficiency and real savings, "there is a need for criteria which require consideration of extraordinary efforts to introduce competition at the prime contractor and major subcontractor level for all multiyear contract candidates. Such efforts should include consideration of dual sourcing, facility contracts, and special financing arrangements." Would you agree that the Department should establish competition as a criterion for evaluating multiyear contracts? If not, why not?

Answer. Competition is already a required consideration in every contract action. Multiyear candidates are no exception.

Question. Last year, Dr. DeLauer agreed with members of this Committee that if economies were not achieved and if more small contractors were not brought into the industrial base, "the exercise is just an exercise. We have to get something real out of it, or it is not worth the effort." Yet the GAO concludes that the Department had no convincing evidence that multiyear contracts will enhance the industrial base at either the prospective prime contractor or major first tier subcontractor level; and furthermore, that Defense has little or no visibility at the second tier and lower subcontractor, vendor and supplier level at this time. Are we to conclude that multiyear contracting is not worth the effort?

Answer. We see no evidence to suggest that multiyear contracting has not been worth the effort. To the contrary, we now believe we have a means of marrying contractual stability to program stability and quantifying the benefits of that marriage in terms of the savings that have been presented.

Question. General Marsh, Chief of the Air Force Systems Command, stated in a September 21, 1981 article in *Aviation Week and Space Technology* that the Department could provide incentives to the prime depending on how well he passed benefits down to the subs. Is the Department in fact providing incentives to the primes to motivate them to pass multiyear contract benefits down to the subs? If so, describe how the program works: What kind of incentives are offered? How well do they work? How are they assessed against estimated savings for the program? If not, why not?

Answer. On major programs, acceptance of firm pricing by prime contractors for extended periods is largely a self-incentivizing act. That is, certainty of price at the prime level creates a need to flow-through similar stability and price certainty to the subcontractor structure. Prime contractor proposals that optimize economic order quantity buying and longer-term subcontract arrangements, and evidence subcontractor investment, may be recognized, or if need be, furthered, by adjustments in negotiated profit. Additionally, flow-through authority for progress payments is a means of affording prime contractors more flexibility in stabilizing and promoting beneficial subcontract relationships. As more experience with major multiyear programs is gained, we will be better able to

assess the inherent incentives of this contracting method and the need, if any, for specific incentive provisions.

Question. Last year, the Department testified that multiyear procurement will increase competition at the subcontractor level. Do you have any evidence that such competition has increased?

Answer. It is to early on the few significant programs under multiyear to make any reasonable assessments on competition at the subcontractor level. The Services have advised of increased interest being generated at the subcontract level.

[CLERK'S NOTE: End of questions submitted by Mr. Edwards.]

Mr. ADDABBO. The gentleman from Florida, Mr. Chappell.

Mr. CHAPPELL. Thank you, Mr. Chairman.

MAJOR SYSTEM MULTIYEAR PROCUREMENT CONTRACTS

Dr. Borsting, on page 5 you say, "We are proposing two major system multiyear contracts this year," and then you indicate, if I understand, that the other ten fall into a different category than the first two. Will you explain to me why you say that is a different category, and if so, are you saying that this request is according to the requirements of the multiyear act?

Dr. BORSTING. This committee asked us to submit to them candidates for multiyear that, under the DSARC system, were major systems. Now, if we follow that definition, only one of the candidates would fit. If you would extend it to include a SAR system also, then two would fit. What we did was give you important candidates we thought you should be considering in having oversight responsibilities.

Now, some of these candidates were ones that had previous DSARCs before like the A6 and the EA-6. They are very mature systems which don't have DSARC reviews anymore.

Mr. CHAPPELL. Have all of the other ten had DSARCs in the past?

Dr. BORSTING. No.

Mr. CHAPPELL. They have not?

Dr. BORSTING. No, our basic criteria for submitting the multiyears to you has been the following: We have expanded the criteria. We have really given you more things to look at than you asked for.

We have said that any system that was proposing economic order quantity procurements should be looked at very carefully, and these are the items that you are looking at now. These are the ones that have economic order quantity over and above the normal advance procurement and have multiyear contracts.

Mr. CHAPPELL. The GAO applied $300 million production cost to classify major weapons system as provided in Section 809 of Public Law 96-107 and came up with nine major systems in your proposals. Is the GAO approach better than that used by the Committee or the Department to identify major weapons systems?

Dr. BORSTING. I believe the GAO used the criterion of $300 million as the cutoff which is a very arbitrary criterion. I think our criterion gives you more to look at and that we should continue with the past guidance from this Committee. You said major sys-

tems. We have expanded it. I would recommend we continue with the criterion that we have established with this Committee.

Mr. CHAPPELL. How would you define major systems? Maybe that would be a better way for this Committee to approach it. How do you define major systems? Incidentally, you say the $300 million is arbitrary. Isn't that in the law?

Dr. BORSTING. The $300 million is not in the law, no.

Mr. CHAPPELL. The law says, ". . . or accumulative production investment in excess of $300 million." Aren't we talking about the same thing?

Dr. BORSTING. I am not sure.

Mr. CHAPPELL. Section 809, the applicable part says that beginning with the quarter ending December 31, 1979, "The Secretary of Defense shall submit quarterly to the Congress Selected Acquisition Reports for those major defense systems which are estimated to require total cumulative financing for research, development, test and evaluation in excess of $75 million or active production investment in excess of $300 million."

Dr. BORSTING. This is the SAR report, not the major system definition. We have also included items here, one I mentioned that was a SAR report that wasn't defined as a major system.

Mr. CHAPPELL. Excuse me for butting in. How do you define a major system?

Dr. BORSTING. Let me answer this in two ways. For the DSARC process, we define a major system as one we decide should go through DSARC based on certain rules. For the SAR reporting, we also have certain rules that we have worked out with the Congress.

For multiyear we have done the following: We have taken all the systems that were either in SAR reporting or in DSARC reporting, but we have added to that, any system that was proposing EOQ funding over and above the normal advance procurement.

DISCOUNTS SAVINGS

Mr. CHAPPELL. Let me come back to a follow-up on a question that was asked earlier. When we are talking about savings, and what systems we ought to be looking at to qualify on the basis of savings, what savings would you normally apply—those programs over 10 percent, those programs over 5 percent, or over 15 percent? Is that a reasonable finding?

Dr. BORSTING. What we have done in my testimony and I guess in the handout, I talked about discounting and using A-94, and we have used the criterion. It is not the only criterion one should use, but we compare a multiyear contract with an annual buy contract.

Mr. CHAPPELL. Annual contract?

Dr. BORSTING. Annual contract, and we look at the outlay streams for each of the years. Then we discount the savings to constant dollars. Then we discount 10 percent. If we get a positive number, it is a serious candidate for multiyear contracting.

We are following the rules from OMB Circular A-94, which states that you should take into account inflation and the time value of money. It is a very conservative way of doing things and in fact, more conservative than what the General Accounting

Office uses. They used a method which is not as stringent as our method.

Mr. CHAPPELL. If we are just looking at dollars presented by the budget, and so forth, we are always looking really at then-year dollars, aren't we?

Dr. BORSTING. That is right, and we have given you the savings in then-year dollars, because you look at then-year dollars when you authorize a budget, and we give you a five-year plan, in then-year dollars, and so we have presented our savings in then-year dollars.

Mr. CHAPPELL. But you have analyzed it on the basis of these others just as another test?

Dr. BORSTING. As another test.

Mr. CHAPPELL. Is that a fair way to say it?

Dr. BORSTING. That is correct, Mr. Chappell.

Mr. CHAPPELL. So the figures we are looking at on the budgets in then-year dollars, that means what those dollars would be regardless of how much they have been deflated in value?

Dr. BORSTING. Right.

Mr. CHAPPELL. And so that all the figures we will be considering are then-year dollars. These charts are simply shown as additional ways of looking at it to better verify your position as stated in then-year dollars; is that right?

Dr. BORSTING. That is correct, and it makes business sense to do this.

Mr. CHAPPELL. Yes.

Dr. BORSTING. But that doesn't mean we wouldn't have the system. Say on our stringent system of using A–94 discounting, if we came out negative there still might be other reasons that we might want a multiyear for certain reasons. But in the 12 candidates that we have before you, they have all been positive, and they made good sense economically from an investment standpoint to do multiyear.

Mr. CHAPPELL. Look at it from the investment standpoint. What is the lowest percentage of savings that we have had in any of the programs which you have presented?

Dr. BORSTING. The lowest number on then-year dollar savings, I guess is about 5 percent or so. The NATO Sea Sparrow was 30 percent savings, and it has a very high discounted savings. You really have to look at both. It has a fairly high total discounted savings using the A–94 rule. The UH–60 engines shows 4.9 percent savings. It is our lowest but it shows positive discounted savings.

Mr. CHAPPELL. Do we understand it is better if we get the same picture if you are explaining it to us in constant year dollars?

Dr. BORSTING. I beg your pardon?

Mr. CHAPPELL. Would we understand it better on a savings basis if you explained it to us in constant dollars, constant-year dollars?

Dr. BORSTING. I am not really sure. I think you should probably look at both. Certainly, as you point out, the budget dollars are important and the then-year savings are important because that is what you appropriate. We are trying to give it to you both ways, and if you would like information for the record in constant dollars, in discounted dollars, we have all this for all the systems we are proposing, and we would be happy to supply it for the record,

so we would have it in then-year dollars, discounted dollars, GAO discounted.

Mr. CHAPPELL. Let me expose my ignorance a little bit further here. If we are planning to understand savings, the discounting for cost of money as compared to the constant dollar approach, you are merely eliminating cost of money and inflation cost, right?

Dr. BORSTING. Both.

Mr. CHAPPELL. Now, can we expect any real savings in addition to this? For example, lower production costs because of multiyear, and so forth, and so on? Are these factors rolled into your savings?

Dr. BORSTING. There are certainly some savings that we have not included here. There are certainly savings that result in the Defense Department because you don't have to negotiate every year. There are savings for the contractor because he can build up his equipment. He has more stability in the system.

We were talking to Mr. Edwards earlier about the industrial base. There are certainly savings of this type that are very hard to quantify that would be in addition to this.

Bill, do you want to comment?

Mr. CHAPPELL. You have not attempted to factor those in? You are simply going strictly without showing us what you think the savings would be by buying in better quantities, and so forth, or are you?

Mr. LONG. Yes, but let me supplement that. The first order of calculation is the price difference in then-year dollars, and you get to a price difference by estimating the differences in cost of production and other factors. For example, you would look at five successive annual contracts versus a 5-year multiyear contract, and you come up with your budget estimates, if we are at the budget phase. You have an estimated price in both instances. The difference between those two estimates gives you the then-year savings.

The other columns in this chart are the application of differing analytical techniques to verify that a program appears to be a good business transaction in then-year dollars, also makes sense from two different analytical standpoints: One is the constant dollar discounted for the time value of money, and the other is simply the application of some sort of interest rate to get in essence a current value. But some of the things that you articulated in your question are inherently involved in the analysis because they go to the two different prices. You can't get an understanding of the savings unless you have a production cost analysis.

Mr. CHAPPELL. Take the CH-53. You are projecting a savings of $92.8 million, is that right? That is a five-year multiyear contract with an option, right? Now, you roll in that 3-year option in that savings configuration, or are you talking about only the savings for five years?

Dr. BORSTING. I think we are saving only for the five years.

Admiral MILLER. That is the 5-year saving comparing the annual buy to our expected contract costs on the multiyear.

Mr. CHAPPELL. And so you have analyzed in each instance that these programs meet all of the six criteria that we are constantly working with; is that right?

Dr. BORSTING. That is correct.

BLACKHAWK MULTIYEAR PROCUREMENT

Mr. CHAPPELL. On the Blackhawk you show a negotiated savings of $81 million. Is that because of fixed price? I believe that is a 3-year program. Isn't it?

Colonel ANDRESON. Colonel Andreson, the Blackhawk Program Manager.

That $81 million savings is in then-year dollar savings, and it was based on the differential between our negotiated three-year multiyear contract, our negotiated one-year annual contract, and the best estimate based on Sikorsky's analysis of vendor quotes of what two follow-on successive annual contracts would be.

Mr. CHAPPELL. You say that this one is now under contract, is that correct?

Colonel ANDRESON. We are under contract.

Mr. CHAPPELL. Three-year contract?

Colonel ANDRESON. We are on a three-year contract, sir.

Mr. CHAPPELL. If you are already on a three-year contract, are you saying here that you are submitting it as a candidate for a longer period of time?

Colonel ANDRESON. No, sir. We are on contract with airframe only at Sikorsky.

In the fiscal year 1983 submission, we are proposing to multiyear the engines for that aircraft.

Mr. CHAPPELL. That is the 700 series?

Colonel ANDRESON. Yes sir, we have procured those engines separately from General Electric, and provide them as government furnished equipment to the airframe manufacturer.

SM-1 STANDARD MISSILE

Mr. CHAPPELL. And on your SM-1 you are talking about a program savings of $62.7 million. What is the status of the contract on that? You don't have a contract on any part of that, right?

Admiral SANSONE. No, we are not under contract on the SM-1.

Mr. CHAPPELL. Have you negotiated on that?

Admiral SANSONE. No sir, we have proposals out on the street, and we are expecting an award in the December timeframe.

Mr. CHAPPELL. How do you arrive at the $62.7 million?

Admiral SANSONE. We have been working very carefully with the contractor and our cost estimators and evolving an estimate to the best level of detail we can at this time.

Mr. Chappell, we also have the baseline of incurred costs over the prior years because we have been buying this missile for several years, so we have cost history using as well as a baseline to develop estimates, so we have the contractor, past performance and history of cost as well as our current estimates.

Mr. CHAPPELL. And you feel quite confident?

Admiral SANSONE. Yes sir.

Mr. CHAPPELL. In that savings estimate?

Admiral SANSONE. Yes sir.

Mr. CHAPPELL. That is an estimate, not based upon negotiation?

Admiral SANSONE. That is correct, it is an estimate. We will be able to confirm those numbers after we go to contract.

BLACKHAWK MULTIYEAR PROCUREMENT

Mr. CHAPPELL. Let me come back to the Blackhawk Quick-fix for just a moment. You say that is a negotiated savings there?

Colonel ANDRESON. Yes sir.

Mr. CHAPPELL. How did that differ from your estimate of savings?

Colonel ANDRESON. That is, sir, an estimate of some sorts, because we did not negotiate successive three-year annual contracts, but that is our best estimate at this point in time, and what we felt was a very solid estimate to go ahead and finalize the negotiation.

We had a firm fixed price multiyear contract negotiated. We had a fiscal year——

Mr. CHAPPELL. That was one year though, wasn't it?

Colonel ANDRESON. No sir, three years. We also negotiated a single year firm fixed price contract and had very good cost data because in response to the government RFP, Sikorsky asked their supplier base to quote the cost of three successive annual contracts, and while we did not actually negotiate a fiscal year 1983 annual contract and a fiscal year 1984 contract, the data base was strong enough to substantiate the savings.

Mr. CHAPPELL. Why can't you do that with all the rest of them?

Colonel ANDRESON. Sir, we were very fortunate when we appeared before you in March because we were much farther along in the budget and negotiating process.

At this point in time we are not in a position, for example, with regard to the engines, to provide that hard type of data. That will not be available until approximately the same time it was on the Blackhawk airframe contract.

Mr. CHAPPELL. I know that you are going to come back to this T-700 Army intended expansion program this afternoon, but was the fact that you might expand that program, factor in the savings you gave us of $81.1 million.

Colonel ANDRESON. No sir, those are independent because we are dealing with two separate contractors.

MK-46 TORPEDO

Mr. CHAPPELL. On the MK-46, you are going to show a savings of $38.1 million. You are talking about a three year multiyear contract.

Was any of that based upon negotiation or are these strictly estimates?

Admiral MILLER. That is the same situation.

Mr. CHAPPELL. The same situation as the SM-1?

Admiral MILLER. Yes sir, we have been under production a long time. We have very good cost records, so we had a good projection of what an annual contract probably would cost, and then we bounced that against our projection of multiyear.

Mr. CHAPPELL. Just talking about real good cost estimates, in February you had a savings of $40.4 million. Then in your current calculations you show $38.1 million.

If you had good data upon which to base that, why would you have that much change in your calculations currently as opposed to your February calculation?

Admiral MILLER. You make a very good point there, and if you notice on that list there are ups and downs as far as the savings go. We have eight programs there, of which I believe five have improved savings.

The one you selected had a reduction in savings. The others are about the same. It is based strictly on an ability to refine the numbers as we get closer and closer to the actual time of negotiating.

CH-53E MULTIYEAR PROCUREMENT

Mr. CHAPPELL. Let's come to the CH-53 for a moment. I notice you jumped from $52.6 million in February to a current of $92.8 million.

Admiral MILLER. Yes sir.

Mr. CHAPPELL. I wonder if we might discuss that just for a moment. Did you have good estimated data in February?

Admiral MILLER. Yes sir, and we worked with the—

Mr. CHAPPELL. That is a 50 percent jump.

Admiral MILLER. Yes sir, but the explanation there has to do with the manufacturer. Sikorsky Corporation got into the multiyear contracting and estimating business with the Army on the Blackhawk. They learned some lessons on just exactly how much could be saved. The estimate that you have there that shows the increase reflects their ability to then go down to their vendors and get better projections of what their vendors said they would be able to do on a multiyear contract. They discovered that they were able to save more in their vendor tiers than they originally told us.

A-6E MULTIYEAR PROCUREMENT

Mr. CHAPPELL. What about A-6E? You jumped from $20.3 million to $60.7 million, more than double the savings. What happened in that period of time?

Admiral MILLER. That was a similar arrangement.

When we first started out, we got the best information we could from the contractor. After the programs were selected from the original list of proposals, we went back to the contractors and said, "Now your particular system is a candidate for multiyear. We need to have some more refinement on these savings and get the exact numbers." They went down into their vendors the same way. It is a rather time-consuming process to do that.

Mr. CHAPPELL. But that is not based upon a negotiated savings there.

Admiral MILLER. No sir.

Mr. CHAPPELL. That estimate is just like everything else, right?

Admiral MILLER. Yes, sir, it is better refined.

Dr. BORSTING. On the A-6E there are some preliminary negotiations.

Admiral SANSONE. On the A-6 we are into discussions with the contractor, and we have been working carefully with Grumman. What has been said to this point is that the total refinement of the data between the Navy and Grumman needs to be accomplished. The various lower tiers of the subcontractors need to refine their data by getting quotes from lower tiers. Once those quotes are available they will go into the Grumman proposal.

TERMINATION LIABILITY

Mr. CHAPPELL. Doctor, I wonder if you would explain one thing to me on this termination or cancellation budgeting process? As I understand it, are you changing that procedure? In other words, are you going to, as I understand it, one year you roll in the figures for what you anticipate the next year cost would be if you terminated it, right?

Now, if you don't terminate that year, then you take those monies and carry it into the next year in the budget process, is that right? Is that the way you do that?

Dr. BORSTING. That is correct.

Mr. CHAPPELL. Is that a factor in coming up with these savings here?

Dr. BORSTING. No.

Mr. CHAPPELL. Is this a different way of accounting?

Dr. BORSTING. No; this is the same funding method that we used last year in funding terminating liability. We are fully funding the end items for the first year, and then we are terminating liability funding the long lead and economic order quantity.

Mr. CHAPPELL. But in these candidates that you have, you are saying that there is a very low risk insofar as cancellation is concerned, right?

Dr. BORSTING. That is correct. We are also saying that if you cancel at the end of the first year, you would not have to appropriate any more money, that there would be enough to terminate.

Mr. CHAPPELL. You would terminate with unfinished products, wouldn't you?

Dr. BORSTING. You would terminate with some unfinished items, not the end item like on the F-16 which I used as an example. You would certainly get your F-16 airplanes, your 120 the first year, but there would be some unfinished economic order quantity items that would be left if you had to terminate.

Mr. CHAPPELL. What was your experience with the F-16? Have the savings been what you anticipated on the multiyear?

Dr. BORSTING. So far I think that things have been going well. I will ask the Air Force to give the latest data.

General FORNELL. All indications are positive and we are currently on track to make the projected savings that we have given to you previously.

Mr. CHAPPELL. So you are saying that your estimates were good on the F-16?

General FORNELL. Yes, sir.

Mr. CHAPPELL. That you are really affecting those savings?

General FORNELL. Yes, sir.

Mr. CHAPPELL. By multiyear?

General FORNELL. The F-16 multiyear contract is with General Dynamics only for the airframe, and it is limited to that part and it is going very well for us in the Air Force.

Mr. CHAPPELL. On the F-16 your original projection of savings was $350 million, right?

General FORNELL. Sir, that was an estimate early on in the program, using a General Dynamics estimate of unconstrained inflation.

The savings we have documented to you are in accordance with the rules and regulations that we operate under, and is in the 260 million dollar figure which we have provided to you.

Mr. CHAPPELL. That is in then year savings?

General FORNELL. That is correct, sir.

Dr. BORSTING. They have increased since the February submission from 246 to 260.

General FORNELL. Yes, sir.

Mr. CHAPPELL. Thank you, Mr. Chairman.

MULTIPLE LAUNCH ROCKET SYSTEM (MLRS)

Mr. ADDABBO. Dr. Borsting, in earlier hearings before the committee we discussed procurement of fire control components for the M-1 tank. The testimony was that there is an intention to go multiyear rather than establish a second source. The savings were shown to be minimal, and the Committee pointed out that in prior testimony in facts and figures that it was more cost effective to go second source.

As we look further at your list now, we see the Multiple Launch Rocket System for which the Army proposes to enter a five-year multiyear contract with two one year options for procurement of a total of 344,356 rockets. The total value of the multiyear contract is $1.7 billion with an estimated savings of over $193.4 million. Since the initial five-year contract involves procurement of economic order quantity materials for the two option years, the Congress is being asked to commit to a $1.7 billion seven-year sole source procurement.

The original production contract with the prime contractor was for the four years from fiscal year 1980 to 1983. Why would you be proposing to begin a multiyear contract before the original production contract is completed?

Mr. SEGGEL. It is essential to start the multiyear contract in fiscal year 1983 in order to maintain competitive pressures during the proposal and negotiation process of the potential multiyear contract.

If the start of the multiyear is delayed until fiscal year 1984, the second source "buyout" quantity will be so small that the real threat of a viable second source would be lost and that negotiating leverage lost. That is why we desire to start at the earliest practical moment on our multiyear, while we have all of the economic and competitive leverage of a viable second source waiting in the wings. Should the potential savings of the more attractive multiyear not be present in the contractor's multiyear proposal, the Army could initiate the second source.

Mr. ADDABBO. As we understand it, the multiyear contract includes only a portion of the total Multiple Launch Rocket System program.

I would ask for the record to specifically set forth what is and what is not included under the multiyear contract.

[The information follows:]

The multiyear contract will procure the remaining US requirements of tactical and training rockets, launch pods/containers, and Self-Propelled Launcher Loaders. Excluded from the multiyear contract are the government furnished equipment (GFE) items (carrier vehicle and M77 submunitions), support equipment procured

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from sources other than the prime contractor, engineering services effort, in-house government costs, fly-to-buy test range costs, basic issue items, and support costs for initial deployment efforts. Of the procurement costs included in the multiyear period, 55 percent are for the multiyear contract, with the majority of the remaining funds required for the GFE carrier vehicle and submunitions.

PREVIOUS PROCUREMENT PLAN FOR MLRS

Mr. ADDABBO. Last year the Army's procurement strategy for this program was to bring on the competitive second source which you have alluded to, when a validated technical data package was to be delivered to the government. The TDP was due in March of 1982. Was it actually delivered in March?

Mr. SEGGEL. I believe we have had a problem of communication relative to what that March 1982 Technical Data Package was supposed to be.

Mr. ADDABBO. Has it been delivered?

Mr. SEGGEL. In fact, Mr. Chairman, the delivery of the TDP in March of 1982 was an interim TDP for the purpose of accepting the initial production deliveries. That TDP was on the rocket and launch pod container which was, in fact, delivered to the government on the second of April 1982.

The interim TDP for the self-propelled launcher/loader will be accepted imminently, in the next week or so.

The final TDP, wherein it is validated via the results of the production qualification tests and Operational Test III user evaluations will be available in March of 1983, which has been the required delivery date since award of the contract in 1980.

Mr. ADDABBO. If it is available a year later, how will you be able to use the threat of a second source when negotiating a good multiyear contract since you are asking us to commit the seven year sole source in this fiscal year?

Mr. SEGGEL. We are in a position at this point where we can go either/or. It is our intention to proceed multiyear with the data package that our prime contractor now has.

As a basis for his initial proposal, which we will evaluate and make a determination as to whether to proceed in the January time frame.

Having made that determination, we would then, based on the final TDP, give him an opportunity to update his proposal against that approach, against that TDP before we award finally in June or July of next year.

Now, in the event that the determination is not made for a favorable multiyear decision, then the process would go into the second source mode using that TDP available in March to proceed toward a second source kind of contract with educational buys beginning in late fiscal year 1983, so we are in that glorious position, we think, where we have the leverage, we can apply it, and if it doesn't come up to our standards, we can go the second source route.

Mr. ADDABBO. Was the prime late in delivering the TDP? Do you feel they are possibly dragging their feet?

You originally were going to have this in March 1982, and it is now going to be March 1983. If you do not have the TDP until 1983, you will have more pressure to commit yourselves to the mul-

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tiyear and not the possible savings under a competitive procurement.

Mr. SEGGEL. We find no evidence, and can't support a contention of the prime contractor dragging his feet on this accelerated program. He has been doing extraordinary work in this five-year development to arrive at the point that we now find ourselves.

In fact, with the development stresses through this program, we believe and are quite satisfied that it has been an extraordinary effort to provide the interim TDPs to enable us to stay on schedule.

The final TDP validated by the results of the Operational Test III and the production qualification tests has been our objective and our point for departure of any final acquisition strategy decisions regarding multiyear or second source considerations from day one.

Mr. ADDABBO. You have had a contract and have been in procurement since 1980. You asked for this TDP, which I presume is required to get a real solid offer from the second source. Would it not be strange if it was due originally in 1982 and now they are now promising it to you in 1983, on a product which has been in production since 1980?

It is not a new product. It is something that has been in production since 1980. It has had some good shakedown going through production, and yet you say it will take him another year to give you this TDP, which could give you a barometer of whether or not you have a cost effective multiyear or whether you should go second source.

Mr. SEGGEL. There are a number of aspects, in response to that.

One, the structure of the accelerated program. There has been concurrency in the MLRS development. Since 1980 in fact there has been a significant development job being done in parallel with that production, with the contractor responsible to keep the production hardware up to date with the evolving design. He is doing that internally.

Mr. ADDABBO. When was the last change?

Mr. SEGGEL. His last change was two months ago.

Mr. ADDABBO. Major or Minor?

Mr. SEGGEL. Minor, but changes involved.

The software changes have been evolving, coming down now to the stage where we believe we have got them nailed down. We just completed our command, control and communications test, for example, from which changes evolved.

Now, I would like to go back to the start of my remarks. The validated TDP has been scheduled for delivery in March 1983 all along. That is why I say there has been a communication problem about the TDP indicated for March 1982. It was an interim TDP and it has apparently been misinterpreted as being the final validated TDP.

I would like to make that clearly understood.

SECOND SOURCING VERSUS MULTIYEAR FOR MLRS

Mr. ADDABBO. It appears to me from your testimony that you are almost saying you are going to go multiyear, and you hang in this

little thing of second source to keep them in line. But if they show you some savings you are going to go with a multiyear.

Again, as I said before, the Committee has seen in prior years that sometimes competitive procurement brings us greater savings than multiyear.

We know that multiyear is the easy way to go. We don't want the easy way. We want the best, most cost effective way, the one that gives us the best national defense. We want to expand our industrial base. We want to save money where possible. As you know, DOD has been given a copy of the procurement study made by this Committee. It shows that we are spending billions of dollars in procurement and only 11 percent is actually competed, and 89 percent has gone sole source.

I would advise you to keep this Committee informed of the savings, the alleged savings you expect on the multiyear, and the cost getting a second source procurement figure as soon as possible. Even the base may be temporary.

In view of the fact again that this program has been in existence since 1980, and we are talking about a quantity of about 344,000 rockets. So we are talking about a large buy. We also know that there has been significant foreign interest in this program, so again there is possible savings all along the line if you look at the larger quantity.

GAO has informed us that the procurement strategy was only being analyzed using a quantity of 190,000 rather than the original sum of 360,000. Even with this temporary or partial TDP, have you received any unsolicited or any proposals from any other contractor for second source?

Mr. DAUSMAN. I am George Dausman. With regard to second sourcing, that was the original plan for MLRS, and it has been studied in great detail, and it continues to be a viable strategy, and an option available to the Army. Any quantity of rockets above 300,000 is a viable quantity for second sourcing.

During the period of the MLRS development program, the expanded multiyear opportunities were presented to us. We took a look at that opportunity for MLRS, and discovered that the savings to the government were significantly better, the estimated saving, than we could anticipate from second sourcing, even though second sourcing is viable.

We can show a savings in second sourcing, if quantities remain above 300,000.

We looked at an excursion in our second source study of what would be the impact of 190,000 rockets and, of course, it was below the 300,000; second sourcing is not viable at 190,000. We have looked at lots of quantities and lots of combinations.

Mr. ADDABBO. Do you have proposals from another possible producer at this time?

Mr. DAUSMAN. The unique position of great leverage that we have in this program is the result of lots of industry interest in the program, and subcontracting opportunities there.

However, we have had no formal alternate unsolicited proposals from anyone at this point.

We have had lots of informal expressions of interest. As a matter of fact, at very high levels within the Army.

Mr. ADDABBO. You are over the 300,000 mark. We are talking about 340,000 to 360,000 in round figures. Have you gone out in the field with the RFP as far as a possible second sourcing in this program?

Mr. DAUSMAN. We have not gone to the field for solicitation for second source.

Mr. ADDABBO. When will you go?

Mr. DAUSMAN. If we are unable to achieve our savings objectives in our multiyear initiative, we will immediately turn to the second source.

Mr. ADDABBO. The Army discussed with this Committee, and from the information we have, was thinking about second source. How will you know that multiyear is better than second sourcing unless you go out and solicit possible second sources?

Mr. DAUSMAN. We have to make estimates.

Mr. ADDABBO. As I said before, we proved through testimony and facts and figures that in the M60A3 fire control system you saved 45 percent against an 8 to 11 percent savings on the multiyear.

In view of that track record isn't there the possibility you are going to make a mistake here, especially when you consider the large quantity?

Mr. DAUSMAN. Each program has to be analyzed in its own set of circumstances.

Mr. ADDABBO. I agree with you, but you have certain benchmarks, certain criteria.

Mr. DAUSMAN. We are confident in our numbers in MLRS. It has been a very good program in many respects to include on schedule and on target.

Mr. ADDABBO. How do you know multiyear savings are going to be there, especially when you have a large quantity item which could be second sourced?

Mr. DAUSMAN. Before we award the contract, sir, of course, it will be negotiated, and we will know in terms of a fixed price contract what those savings are with regard to multiyear.

If they don't meet our objective——

Mr. ADDABBO. You know what those savings are, but you don't know what a second source could give you as a savings unless you look at it, and you haven't analyzed it and there must have been some doubt in your mind that there could be great savings by second sourcing because it was the original intention of the Army to go second source.

Mr. DAUSMAN. It was the strategy, sir, before the multiyear authority was available to us.

Mr. ADDABBO. That is the easy way. Multiyear is the easy way. We don't look for the easy way. We want the best, most cost effective way, and also to make sure we have a true national defense, increase our industrial base.

We were talking about it over a year ago, and only last year you were talking about possible second sourcing, so I suggest you look at the second sourcing before you go into this $1.7 billion program.

Mr. DAUSMAN. Yes sir.

Mr. ADDABBO. Because it can be a big dollar savings. There may be none, but I think the taxpayers and the Defense Department

should know before a decision is made on the $1.7 billion multiyear contract.

Mr. DAUSMAN. Yes sir.

Mr. ADDABBO. The gentleman from Florida.

ESCALATION AVOIDANCE NOT CONSIDERED SAVINGS

Mr. YOUNG. Thank you, Mr. Chairman.

Dr. Borsting, the House Armed Services Committee has said that escalation avoidance should not be considered as a savings.

What would that do to your savings estimate?

Dr. BORSTING. As I presented some handouts, I talked about discounting with regard to those savings. I don't know whether you got those, Mr. Young.

Mr. YOUNG. Does your handout respond to my question?

Dr. BORSTING. Yes, it gives you the savings in then year savings, in constant dollar savings and in discounted savings.

Mr. YOUNG. Mr. Chairman, could we have this made a part of the record at this point?

Mr. ADDABBO. Without objection.

Dr. BORSTING. Yes, I used this as my preliminary opening remarks, and had this handout at the start of the hearing, so this is part of the record.

Mr. YOUNG. I would like to have it part of the record at this point as well, since it does appear to respond to the question.

Mr. ADDABBO. Without objection, so the gentleman can make reference to it.

[The information follows:]

COMPARISON OF SAVINGS ON FY 1983 MULTIYEAR CANDIDATES USING OMB CIRCULAR A-94 AND GAO METHODS

(Dollars in Millions)

	THEN YEAR SAVINGS	CONSTANT 82 DOLLAR SAVINGS	10% DISCOUNTED SAVINGS (A-94)	13.9% DISCOUNTED SAVINGS (GAO)
CH-53E	92.8	53.3	22.7	32.3
MLRS	193.4	92.2	13.7	29.5
SM-1	62.7	33.9	9.8	17.3
EA-6B	38.5	22.3	9.0	13.2
A6E	50.7	26.0	6.7	12.0
NATO SEASPARROW	37.0	25.5	14.0	17.2
MULE	5.5	3.5	1.8	2.5
TAO	75.0	41.6	12.2	19.9
MK-46	38.1	23.9	11.3	16.2
DMSP	49.3	25.5	5.2	11.0
UH-60A ENGINES	14.9	10.1	5.2	6.7
KC-10	658.0	360.9	110.7	180.3
TOTALS	1,315.9	718.7	222.3	358.1

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OSD REVIEW OF MULTIYEAR CANDIDATES

Mr. YOUNG. What type of review is OSD performing on the multiyear contracts that have been awarded or are in the process of being awarded to assure that a consistent pattern is being followed?

Dr. BORSTING. As you know, we have our instructions on multiyear.

First, the services screen based on these criteria, and I believe earlier Admiral Miller said that his office had received about 70 multiyear proposals.

They screened them down to about 15 or so. These 15 went to my office, and in working with other OSD staff like Mr. Long's office, we have screened these down with negotiations back and forth to the eight that are listed in the 1983 submission.

That is just an example.

In other words, there is screening in the services, at our level and, of course, the last screening we are doing right now is in the various congressional committees, which are also looking at the various proposals.

Mr. YOUNG. I get the feeling that you are talking about the proposals, and I think we are asking about the actual contracts.

Dr. BORSTING. Again, we don't have these yet. We are talking sometimes twelve to eighteen months from the time we submit a budget until the contract date. The services submitted their candidates for multiyear last October to my office, followed by a continual negotiation back and forth, until we submitted the budget in February of this year.

Things have changed on our budget estimates. But we normally don't get detailed contractor estimates, binding contractor estimates, until we get authority from the Congress to act in this regard.

TYPE OF MULTIYEAR CONTRACTS

Mr. YOUNG. Did you have any multiyear contracts in fiscal year 1982?

Dr. BORSTING. Yes, they are listed, in my statement.

Mr. YOUNG. Were any of those fixed price contracts?

Dr. BORSTING. The contracts in multiyear are all firm fixed price or fixed price incentive contracts.

Mr. YOUNG. All of them?

Dr. BORSTING. All of them by our instruction.

Mr. YOUNG. What is the difference in firm fixed price and firm fixed price incentive?

Dr. BORSTING. Let me get my procurement director, Mr. Trodden, who I am sure can give you a detailed answer.

Mr. TRODDEN. In summary terms, a firm fixed price contract is exactly that. There is one number which is the ceiling. It is the number in the contract.

In a fixed price incentive contract, there is both a target cost or a target price to the government and a ceiling price, and any variation between the target price and the ceiling price is shared between the government and the contractor pursuant to a prenegotiated formula.

Mr. YOUNG. Does that mean that its price might go above the fixed price if the contractor meets certain deadlines, certain milestones, performance, and so forth?

If he meets these, he gets a little extra in addition to the fixed price.

Mr. TRODDEN. Above the target. It is possible that one of the incentives in a fixed price incentive contract would have to do with performance and yes, he could get remunerated above target for such performance, but not above the ceiling.

There is a ceiling in a fixed price incentive contract.

Mr. YOUNG. I have a hard time comprehending that system. I think that is one of the reasons we find our defense programs receiving a lot of criticism.

You know in private industry if you agree to build a building, and you set a fixed price, and if you are to take delivery at a certain time, usually if you don't meet those requirements, you pay extra.

There is usually a penalty clause in the contract, and if you do meet the milestones, if you do meet the timetable, if you do meet the dollar figures, then you get the agreed upon price.

Why is it that in Defense programs we have to agree on a price, and then if they do the job like they should in the first place, we find that we have to give them a little bonus.

Why is that? Is there something unique about Defense contracting that requires that kind of an additional incentive?

Mr. TRODDEN. There are two parts to my answer to that, Mr. Young, and I apologize. I am not totally conversant with the contracting style in the construction industry, but I do believe that they do have escalators and de-escalators in such contracts. More specifically though, with regard to our contracts, if the contractor performs as predicted, he is paid target price on that contract, and all we are talking about is the extent to which he comes in above target, but below ceiling, he shares the burden with the government out of his profit on that overrun in cost.

Similarly if he underruns the target, we share with the contractor the savings associated with that underrun, and all we have done here is within two parameters describe the uncertainty in cost inherent in the negotiation.

Mr. YOUNG. If we went back to the last ten years, how many instances could you tell me of the government having to pay more as opposed to how many instances you can tell me about the contractor sharing part of his profit?

Mr. TRODDEN. I have no statistics on that, sir.

Mr. LONG. I may supplement that, Mr. Young.

When the government, and it is not just the Department of Defense, buys commercial-type items, it buys in a commercial type way.

When we buy buildings, we buy them just the way an insurance company will buy a building.

What we are talking about is the use of a rather sophisticated contracting technique for rather sophisticated work. Even our very complex systems become fixed price once the industrial experience, the manufacturing experience, is built up.

The fixed price incentive contract is most often used in the early production phase when the risks are really not quantifiable, either the risk to the government or the risk to the contractor, and it is a device that was created in the late sixties and early seventies to better allocate the risk between the contracting parties, but the vast majority of our contracts, if you look at the total spectrum, are in fact fixed price.

Mr. YOUNG. Before you even consider a program for multiyear, isn't that program supposed to be quite stable? Don't you understand what it is going to be and the contractor is ready to go. You don't have a lot of questions unanswered. Isn't that part of the criteria that you look at before you even select a program for a multiyear program.

Mr. LONG. That is true, but there are varying degrees. Don't misunderstand the testimony.

We are not saying that all of our multiyear contracts are fixed price incentive. There are some of these systems that have been in production where the contractor and the government have a high degree of confidence not just in cost, but manufacturing techniques.

In contrast, there are others in which there may be some evolving manufacturing techniques.

No program is ever risk-free. No manufacturing contract is ever risk-free, and it is a matter of assessing the degree of risk and attempting to contract on the basis that most fairly allocates the risk between the two parties.

Mr. YOUNG. Let me say to you that I understand the complexity of Defense programs, and why you really would have difficulty in relating many Defense programs to anything in the civilian category, I also am a proponent of multiyear contracting, I think that this Committee and I think you on your side of the table—that all of us—have to be extremely careful that we don't allow any abuse to creep into this multiyear procurement that will open us up for any, even more criticism than we get today, much of which is unwarranted.

Mr. Chairman, I wonder if I might—you must have some more questions that you could get into while I go vote, because I would like to come back and talk about the KC-10 for a few minutes.

Mr. ADDABBO. The gentleman from Florida, Mr. Chappell.

INCREASING COMPETITION

Mr. CHAPPELL. Thank you, Mr. Chairman.

We got a bit into the subcontractor situation a little earlier, but let me ask you this:

Last year the Department testified that multiyear procurement will increase competition at the subcontractor level. Can you give us any evidence that such competition has increased?

Dr. BORSTING. As I said earlier, it is very difficult to do this. There is no hard evidence because we just started in 1982 awarding multiyear contracts.

Mr. LONG. We just don't have the data.

Mr. CHAPPELL. I understand it. I just happen to be a great believer in the multiyear contract arrangement. There are two things we are after. One is savings and the other is a broadening of that in-

dustrial base, a strengthening of the industrial base to get more subcontractors involved.

Dr. DeLauer said last year, in agreeing with the members of this committee that if economics were not achieved and if more small contractors were not brought into the industrial base the exercise is just an exercise.

We have got to get something real out of it or it is not worth the effort. That is what he was saying.

I think what bothers a lot of us is whether or not the Department of Defense is really putting pressure on the prime enough that you are forcing him to work with the subs to broaden that base to give incentive to those subs, to get more subs in, and to get the subs going. I think that is what is concerning us.

I think that is the thrust of a lot of the questions we have here today.

The GAO concludes that the Department had no convincing evidence that multiyear contracts will enhance industrial base, either the prospects of prime contractors or major first tier subcontractor levels.

Furthermore, Defense has little or no visibility at the second tier and lower contractor vendor/supplier at this time.

I think you see what we are getting at, if it is going to be worth the effort it seems to me Defense has got to get in there and encourage and push these primes to work on down to that subcontractor level, to give them more incentive to broaden that base to get involved in the situation, and I guess the question is, are we doing that.

Are we getting in there hard enough? Are we doing the things that are necessary to do to get these people involved?

Dr. BORSTING. Bill, do you want to take a crack at that?

Mr. CHAPPELL. I know you can't show much evidence at this point, but the point is, are we doing the things that are going to bring us results?

Mr. LONG. I think that if you look at the conduct of a program management team, a service team, getting into multiyear, you will see a lot of interest focused on not just the prime contractors, but on what is their subcontractor plan.

For lower tier subcontractors, it has to be understood that the competition we expect will arise from the fact that because our primes are buying five years and their higher tier subs are buying four or five years worth of requirements there will be more people interested in bidding those requirements.

Now, can we tell you today in August of 1982 that that has happened across the board? We simply can't.

Mr. CHAPPELL. General Marsh, Chief of the Air Force Systems Command, stated on September 21, 1981, in an article in Aviation Week and Space Technology that the Department could provide incentives to the prime depending on how well he, the prime, passed benefits down to the subs, and the question obviously follows, are we doing that?

Is the Department in fact providing incentives to the primes to motivate them to pass multiyear contract benefits down to the subs?

If so, and this question has been submitted for the record, I wish you would amplify on that for us and show us what emphasis is being done, what visibility is taking place on the part of DOD to really push this thing on down to a broadening of that base through some type of incentives with those subcontractors.

Mr. LONG. I might just comment, Mr. Chappell, that the only way you get real savings in multiyear is, as was indicated, economic order quantity buying of components, that the primes seldom make. This flows down to the vendor level, so you just know it is working by reason of these then year dollar savings.

Mr. CHAPPELL. If the prospective subs can't see an opportunity to really share in this thing and share in long term, they are not going to go into the tooling that is necessary?

Mr. LONG. Right.

Mr. CHAPPELL. And they are not going to make the investment, and they are just not going to get the job done.

I commend the Department on having these seminars around the country, which is designed to encourage new subs to come in and look at the programs. I think that is a tremendous program.

You held a very good one in Jacksonville.

Dr. BORSTING. We have done quite a bit all over the country.

Mr. CHAPPELL. We are going to have two more in my area to enhance the work in those instances in which the prime can lay out what is available, and try to get the subs involved.

I think that is a great program, but I do think it is necessary for the Department to be visible, in pushing this thing right on down to the subs or I don't think it will get done.

Dr. BORSTING. We certainly will continue to do this. Also, we will monitor these multiyear efforts to try to justify to you in the future and to the other committees, what we are talking about because I think we all agree that it provides benefits.

In fact, we were quoting to people about benefits, contained in your 1982 report which said, "It clearly offers opportunity to shore up the defense industrial base by attracting subcontractors, vendors and small suppliers who under current procurement practices are leaving the defense field."

We all agree—this is in your report of last year—we all agree with this. We have got to do a better job of monitoring and making sure this happens.

Mr. CHAPPELL. I think we would be interested to really see the program as you see it, how you are going to lay it out, how you are going to keep the budget on top.

Someone described it as an inverted pyramid where the prime just depends upon that sub, and if you don't broaden that, change it from the image of a very narrow inverted pyramid, we are not going to really accomplish the purpose.

Dr. BORSTING. That is correct.

C–2 DOD AIRCRAFT PROGRAM

Mr. ADDABBO. Admiral Miller, the House Armed Services Committee denied the funding required to continue multiyear processing for the C-2A aircraft.

This is one of the systems that was actually chosen and funded last year as a multiyear program.

Earlier this year Admiral McDonald stated that if the conferees agreed to the House position the Navy stands to lose over $50 million.

Is that an accurate statement?

Admiral MILLER. Yes sir, that is our figure that we estimate the loss will be for terminating the contract entered into. I think that we are actually talking about our losses in the actual loss of product that we would be buying.

Mr. ADDABBO. If the conferees agreed not to fund the C-2A as a multiyear, what would the closing out of this contract entail?

Admiral MILLER. It would entail the fact that the advance procurement in 1982 is termination liability funded.

We would then have to provide that for the contractor, and when that was done we would then have the products, not end products for use. This was the restart of a previous program, as you know, and we would not have a completed end product at the end of that first year.

Mr. ADDABBO. Does the gentleman from Washington State wish to be recognized at this time?

REQUEST FOR MULTIYEAR PROPOSALS

Mr. DICKS. Have you formally requested proposals for your multiyear candidates?

Dr. BORSTING. Yes. We have for your committee and summarized in my statement are twelve multiyear candidates for fiscal 1983. Eleven were in the budget; one was submitted since the budget time.

Mr. DICKS. Which was the one that was submitted?

Dr. BORSTING. KC-10.

Mr. DICKS. Did DOD submit a request for both multiyear procurement and single year contracts for the multiyear candidates you are proposing so you could make a comparison between the two alternatives?

Dr. BORSTING. No, we wouldn't do that normally with other contracts. It is way ahead of time, 12 to 18 months.

We have no individual cases. They differ. We have worked with the contractors. Where we had annual buys before. We used our cost estimating procedures in the normal way to get budget estimates, and that is what these are, budget estimates which are continually updated and refined as we go to the contract time.

Mr. DICKS. When will you receive these proposals?

Dr. BORSTING. When the Congress authorizes us to go ahead on some of these buys, then we will go to the contractors and ask for proposals.

Mr. DICKS. I thought you said you had already asked for the proposals.

Dr. BORSTING. We have asked the Congress for multiyear approval.

Mr. DICKS. You have asked Congress. You haven't asked the contractors yet?

Mr. LONG. If I may inject, I think we answered your initial question as relating to our proposals to the Congress, not proposals from the contractors.

Dr. BORSTING. We have also, as I said very early, asked for definitive proposals for some items. In fact the engine on the Blackhawk is fairly firm at this time if I remember correctly.

Colonel ANDRESON. We have preliminary data from General Electric. However, we do not have a formal RFP.

Mr. DICKS. If proposals from contractors were not requested for all MYP candidates, explain why they were not requested, and if you plan to request these proposals in what timeframe will these be done?

[The information follows:]

At the time that the fiscal year 1983 President's Budget was prepared, formal Requests For Proposal (RFP) had not been issued to the contractors for the twelve fiscal year 1983 MYP candidates since it was too far in advance of anticipated contract award. Rather, the normal cost estimating procedures were used to obtain estimates of multiyear procurement and single year contracting. Since that time, however, formal requests for proposal have been issued to the contractors for 10 of the twelve MYP candidates. Of the remaining candidates, Requests For Proposal for the Army's Black Hawk engine and the Navy's MK-46 Torpedo will be issued in September 1982.

C-5B MULTIYEAR PROCUREMENT

Mr. DICKS. Dr. Borsting, a slightly tangential issue, but I would assume that maybe potentially the C-5B, would that be a candidate for multiyear procurement?

Dr. BORSTING. I haven't heard of that airplane. Are we talking about the C-5?

Mr. DICKS. No, it is a multiyear program, and it could be a candidate for multiyear procurement. I was interested in knowing whether it is being considered.

Dr. BORSTING. No.

Mr. DICKS. Let me ask you, is one of the reasons why it is not being considered that there has been a $2.1 billion increase in the acquisition cost of the C-5B. Could you comment?

Is that accurate?

Dr. BORSTING. I am not aware of this. The C-5 is not being considered as a multiyear candidate for 1983. I am not aware of it. Is any of the Air Force?

General FORNELL. Not aware of it.

Mr. DICKS. Could you let us know for the record whether there has been an increase?

Dr. BORSTING. Certainly.

Mr. DICKS. We are told that there has been an increase, but that it has now been classified because of the obvious implications towards the selling of the C-5 on Capitol Hill, and I think the Committee ought to know, because the C-5 could be a candidate for multiyear procurement.

I think one of the criteria is to have a stable program, and if you had a 2.1 billion dolla_ incr e at this point, it would raise some questions about the stability of the program for multiyear procurement purposes.

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Dr. BORSTING. We can certainly give you an answer for the record.

[The information follows:]

The source of the reported cost increase is an internal Air Force/Office of the Secretary of Defense programming document used in the normal process of developing the DOD fiscal year 1984 budget.

The Air Force estimate of $10.9B then-year dollars found in the programming document is not comparable to the $8.8B in the fiscal year 1983 President's Budget currently before the conference. The programming document includes $.9B in replenishment spares, which, although included elsewhere in the budget submission, are not, by definition, part of the program acquisition cost shown in the President's budget. A comparable figure to the $8.8B would be $10.0B

The resultant $1.2B cost difference reflects two areas of change. First, there is approximately $.5B for inflation related to the schedule adjustment because contract award will be later than originally forecast, due to the lack of fiscal year 1982 funding. Second, in preparing our 1984 budget, we reworked figures for all our programs, including the C-5B. It was necessary to add several items which had not been included in the future-year estimates transmitted with the President's fiscal year 1983 budget. These items include certain elements of ground support equipment, training equipment, technical data and management reserve. These government add-ons will cost approximately $350M (fiscal year 1980 dollars). This amount, adjusted for inflation over the eight years following 1980, becomes approximately $700M in then-year terms. The $350M in government add-on items are not a part of the Lockheed fixed price proposal. In fact, the Lockheed firm fixed price proposal for 50 C-5B aircraft has not changed. Nor are the relative cost comparisons between the C-5 and other aircraft affected by these developments.

Mr. DICKS. Thank you. I don't have any further questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Florida.

KC-10 MULTIYEAR PROCUREMENT

Mr. YOUNG. Thank you, Mr. Chairman.

Dr. Borsting, the budget justification book for the 1982 Supplemental stated that "funds are requested for two KC-10s, which would be fully funded." Subsequently a letter from Mr. Carlucci was delivered stating that the funds would be used as part of a multiyear procurement with an expanded advance buy.

Why didn't we get a budget amendment reflecting this change?

Dr. BORSTING. In 1982?

Mr. YOUNG. On the 1982 Supplemental.

Dr. BORSTING. If my memory serves me correctly, we weren't asking for any additional funds. We were just changing the way we would use the funds, if my memory serves me correctly.

That is why it wasn't a budget amendment.

Mr. YOUNG. In the hearings of our Committee on September 24, 1981, as we dealt with the budget amendment for fiscal 1982, Secretary Weinberger recommended that no funds be provided for the KC-10, and that the program be terminated. He said in that testimony, "The cancellation of the KC-10 is not going to reduce our airlift ability."

Now we are in for the KC-10 program this year with strong support. What has happened to change the position of the OSD on the subject of the KC-10?

Dr. BORSTING. A study had been going on over a long period of time on our airlift, and the Department now has decided on what we should have in the way of airlift, and the KC-10 is an important part of that, so it is a firm decision.

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Mr. YOUNG. As you know, this subcommittee was responsible for funding the program over the objection of OSD, and I certainly was one of the initiators of that movement, and so I am happy to see you have changed your mind.

I was really wondering why you changed your mind.

Dr. BORSTING. In evaluating things, we agreed with you it was the right way to go.

Mr. YOUNG. The KC-10, of course, can operate either as a tanker and/or airlifter, and the thrust of the justification for the KC-10 in the past has been the emphasis on the role as a tanker.

Now it appears that recent defense statements are emphasizing the airlift role. Are you changing your mind there as well? Are you considering the KC-10 as more of an airlifter than a tanker?

Dr. BORSTING. It can go either way, as you know. I don't know of any fundamental change in our thinking.

General FORNELL. Sir, if I may, the Air Force has always considered, in fact we have gone through a number of iterations calling the airplane different things.

If you recall a few years back we called it the ATCA, meaning Advanced Tanker Cargo Aircraft, showing that the airplane had inherent capability with respect to cargo, but always designed as a tanker.

Now, in the context of our increased global mobility questions and some of our RDJTF work that we are doing worldwide, it has showed the actual value of both the tanker and cargo capability of being able to deploy our fighter forces and strategic airlifters while air refueling those airplanes as well as carrying their support equipment and people necessary to begin fighting as soon as they arrive, if necessary, and it shows I think the real value of the airplane in that context.

Mr. YOUNG. I agree with that and I have to say that is a very impressive capability that the aircraft has, and I am happy to see that we are moving ahead with the KC-10 program.

In the previous testimony we were told that the contract for the KC-10 would be let around December. Is that still the timeframe?

General FORNELL. Sir, that is the timeframe that the contract is normally awarded by the language in the contract itself.

Our request for multiyear this year expands and grows out of our original contract which we negotiated with the Douglas Aircraft Company under a very severe competitive environment for the Advanced Tanker Cargo Aircraft.

We used the inherent wording of that contract, which is a fixed price contract with a negotiated EPA clause or escalation clause, to grow out into a multiyear contract using the fixed prices, the good prices of a very competitive environment to procure the 44 remaining airplanes that are within the KC-10 contract now, and I think admitted from both Congress, and the Department of Defense, as to being a very competitive price.

Mr. YOUNG. In previous testimony again, we were told that at the peak KC-10 production rate, the contractor was delivering 55 aircraft in one year.

We were also told that the contractor was producing at just 8 KC-10s per year in fiscal 1983, but that despite that the price estimate the Air Force is receiving for the KC-10 is excellent.

It seems to me that when the production line is down, and the commercial production on the KC-10 line is closing with no new contracts, the KC-10 is the only production with less units going through the line. It would appear to me there would have to be an increased cost over what we had when we had considerably more aircraft going through the line.

General FORNELL. Yes sir, there is a slight dichotomy there. However, those prices were negotiated. We do have a firm contract, and we are in the same kind of an economical situation with respect to the airline industry now, to capitalize on those very low prices.

The line will continue with commercial deliveries through November of 1982, and then our KC-10 program would be the only product moving down the KC-10 line.

There is another business out at Douglas in Long Beach which primarily constitutes the DC-9 1980 business, and they do some other work with respect to ejection seats out at that facility, but we are taking advantage to grow at a minimum rate, but price is already negotiated with our multiyear proposal.

Mr. YOUNG. If we increased the buy of the KC-10 so that the production line could handle more KC-10s, would that save us any appreciable amounts of money?

General FORNELL. Sir, the savings to be had, we have a proposal, a multiyear proposal, which is kind of a balance between what the company can do and what we have the resources to do within the proposed airlift decision on DOD.

The savings that we incur, if we were to accelerate our base with an earlier scheduled delivery, but I believe our proposal which we have is a balance between the company's capability and our respective resources we have applied to the KC-10 portion of the airlift decision.

Mr. YOUNG. Your statement mentions that the KC-10 program submitted in the budget proved to be non-executable.

One, will you explain what you mean by that, and two, why is it non-executable?

General FORNELL. Yes, sir. The words "non-executable," when we went through the airlift decision which, if you recall, was made just prior to the budget submission to the Congress in early February, we quickly had an estimate in partnership with OSD and the Air Force which fitted up a profile of numbers for the five-year period.

We quickly made refinements to that and saw immediately the potential of expanding our current contract into a multiyear concept so that we could come in under those program dollars that we had allotted to the KC-10 portion of the airlift decision.

When we say non-executable under an annual buy, the original concept was thought of in terms of an annual buy. That incurs some production gaps, a ten-month production gap. It is not able to use the current contract we have to grow to a multiyear. We would have to go out and renegotiate the following buys of airplanes beyond the 1983 option.

Those are all undefinitized, and we felt we had a real thread to run through a multiyear concept through the use of our older contract.

96-942 O - 82 - 42

Mr. YOUNG. Would you look again when the transcript is prepared, at the questions prepared by staff on the KC-10 and respond to those for the record?

General FORNELL. Yes, sir, I will.

[CLERK'S NOTE: Questions submitted by Mr. Young and the answers thereto follow:]

Question. You mention that after November the DoD will be the only customer for the DC/KC-10 production line. What is an economically viable production rate for the KC-10?

Answer. The lowest viable production rate for the DC/KC-10 production line is eight aircraft per year. A more economically acceptable rate would be two aircraft per month.

Question. You state that "the overall TOA (total obligational authority) was reduced by $215 million from that of the President's budget, although increases in annual TOA in fiscal year 1984 and 1985 were required."

The $215 million reduction is for what period of time?

Who made the reduction you are referring to?

Answer. The $215 million is the savings from the President's Budget over the full five years (fiscal years 1983-1987 of the KC-10 44 aircraft procurement. The reduction was made when the Air Force and Douglas formulated the multiyear procurement profile.

Question. You mention that one reason for supporting this request is to ensure that "one of the nation's two wide-bodied aircraft producers will remain viable . . .".

Is the survival of the company at stake with this order?

If so, has that fact influenced the decision to recommend procuring these aircraft?

Considering the dismal condition of the market for wide-bodied aircraft, is it urgent that two companies maintain a capability to manufacture them?

Answer. We in the Air Force are not in any position to determine the ultimate survival or failure of the company. However, we believe that without the KC-10 program the DC/KC-10 production line will shut down.

In any event, the decision to recommend the procurement of the KC-10 was not influenced by the company's financial situation. The KC-10 is a vitally needed asset to improve our mobility posture through its unique combination of aerial refueling and cargo carrying capabilities.

The maintenance of a major manufacturing capability at Douglas plus the subcontract base that supports that capability should be of great interest to the Committee. The KC-10 multiyear proposal represents one piece of tangible evidence where the industrial base will be strengthened because of the multiyear procurement. A second source for wide body aircraft will encourage necessary competition in both the civilian and military markets as well.

PROCUREMENT PROFILE FOR KC-10

Question. The budget documents which have been submitted to the Committee request $949.1 million for KC-10s: $120 million (including $5 million for initial spares) for full-funding 2 KC-10's in the supplemental; and $829.1 million (including $39 million for ini-

tial spares) to fully fund 8 KC-10's in fiscal year 1983, and to provide funds for additional aircraft for fiscal years 1984-87 "under an expanded multiyear advance buy procurement."

However, by letter of April 21, 1982, Deputy Secretary Carlucci advised the Committee that the funds in the fiscal year 1982 supplemental would be used only as advance buy procurement for a multi-year buy.

Specifically, what is the "procurement profile" now for the KC-10? What do you intend to procure if these supplemental and fiscal year 1983 requests are approved?

Answer. The procurement profile for the KC-10 is that contained in the April 21, 1982 Deputy Secretary of Defense letter and its attached multiyear program justification data. It is as follows ($ Then Year Millions):

[Fiscal years]

	1982	1983	1984	1985	1986	1987	Total
Orders	0	8	8	8	12	8	44
Deliveries	0	2	7	11	12	12	44
Full Fund	0	354	208	115	150	105	932
Adv Buy	120	441	551	649	335	0	2,096
Init Spares	0	28	54	56	72	0	210
Total	120	823	813	820	557	105	3,238

If the fiscal year 1982 Supplemental and fiscal year 1983 requests are approved, eight aircraft will be fully funded and advance buy will be initiated on the remaining 36 aircraft of the multiyear procurement.

Question. According to the Congressional data sheets, $261.3 million of the fiscal year 1983 funds are for "advance procurement of fiscal year 1984-87 aircraft under an expanded multiple year advance buy procurement."

Comment for the record as to what specifically is included in the $261.3 million request.

How many KC-10's would you buy components for with the $261.3 million?

Answer. The $261.3 million dollar figure is the advance buy level included in the President's Budget program which has since been described to the Congress as a non-executable program. One reason the program cannot be executed is because of this figure; it is too low to fund the long lead effort necessary for a 44 aircraft procurement. The revised figure contained in the April 21, 1982 letter from Deputy Secretary Carlucci is $441.0 million. These funds will initiate procurement of all 44 shipsets of engines in order to retain the current prices from General Electric. They will also be used to start procurement of the longest lead time components such as fuselage sections, landing gear forgings and refueling booms. Varying numbers of outyear aircraft will be affected depending on the various subsystems and their lead times.

Question. According to the GAO, the advance option priced funding profile for the KC-10A multiyear proposal shows that approximately ¾ of the required money will be advance funded before the

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end item is actually ordered. What causes this situation to occur? Doesn't this funding profile in fact represent incremental funding?

Answer. There were three reasons for the formulation of the recommended multiyear profile: (1) the desire to keep the multiyear request as close as possible to the TOA levels already requested in the President's Budget, (2) the desire to preserve the excellent prices, terms, and conditions contained in the current KC-10 contract that had been obtained under vigorous competition in 1977, and (3) the economic realities at Douglas aircraft that dictated a delivery schedule that accelerated deliveries in order to prevent expensive or line-terminating production gaps. The resulting multiyear profile, while over the President's Budget TOA levels in several years, is $215 million less over the five year period; it retains nearly the same prices as the current contract; and it meets the needs of the production line economic situation.

We do not believe it is an incrementally funded program. It contains fully funded aircraft buys in each year and advance buy/economic order quantities funded to their termination liability levels. In an incrementally funded approach to this same procurement, no deliveries could be guaranteed in any given year; whereas, with multiyear, termination in any year will result in a specified number of completed aircraft deliveries.

[CLERK'S NOTE. End of questions submitted by Mr. Young.]

Mr. YOUNG. Thank you. Thank you, Mr. Chairman.

LACK OF BUDGET AMENDMENT FOR KC-10

Mr. ADDABBO. Mr. Murphy.

Mr. MURPHY. Dr. Borsting, when the President submitted his 1982 supplemental and 1983 budget on the KC-10, he indicated that he was going to buy two KC-10 aircraft in fiscal year 1982 for $120 million, and eight aircraft in fiscal year 1983 at a cost of $829.1 million.

There was a significant change made in the program when Deputy Secretary Carlucci transmitted a letter to Congress that says he is going to utilize the $120 million in the fiscal year 1982 supplemental as advance procurement and obligate it in 1983 instead of 1982, in order to institute a multiyear procurement of KC-10 aircraft.

Now, that is a significant change in the program.

Instead of buying two aircraft in 1982, DOD is buying zero aircraft in fiscal year 1982. Instead of obligating $120 million in fiscal year 1982, DOD is going to obligate zero dollars in fiscal year 1982.

Do you think that Secretary Carlucci's letter to the four committees of Congress constitutes an amendment to the President's Budget? Don't you think that an amendment should have been submitted by the President to reflect this change in fiscal years 1982 and 1983?

Dr. BORSTING. Well, I believe I answered this question earlier I don't think a budget amendment would be needed, but a budget amendment could be submitted also. Letters were submitted to the Congress.

Mr. MURPHY. But letters from the Secretary of Defense and deputy secretaries of defense do not constitute an amendment to the President's Budget, and you know that.

Dr. BORSTING. That is correct.

LACK OF ALTERNATIVE FOR THE COMMITTEE

Mr. MURPHY. The Committee had indicated last year that it would like to look at proposed multiyear procurements on a case-by-case basis. Now a letter from Secretary Carlucci changed the requirement in fiscal year 1983 for the KC-10 from $829.1 million to $823 million. The House and Senate Armed Services Committees, which have authorized the basic multiyear procurement legislation, I would assume would normally approve and authorize all of your multiyear packages. Therefore, if they authorize $823.1 million and this Committee did not agree with the heavy advance procurement and economic order quantity money that is being provided for four years of a five-year multiyear contract, what alternative does this Committee have in such circumstances?

Dr. BORSTING. We have submitted to you different profiles on the KC-10, which would fund some of the economic order quantity in a different way. The outlays would always be the same. The outlays on the multiyear would be the same, but the number of end items would be fully funded earlier.

If I am not mistaken there have been informally some alternative paths submitted to you.

Mr. MURPHY. There have been two alternatives submitted, but Congress doesn't budget for outlays.

Dr. BORSTING. I understand that.

Mr. MURPHY. We are talking about budget authority, and that is what is authorized by the House and Senate Armed Services Committees.

Dr. BORSTING. I understand that.

Mr. MURPHY. And if the Armed Services Committees authorized less money that prohibits this Committee from making an alternative decision, the Committee may want to recommend an annual buy, or adjust the fiscal year 1983 multiyear buy to bring some of the advance procurement funding forward to 1983. However, we would be prohibited from doing so because of the level of the authorization. Therefore I am asking you this. The Committee indicated last year it wanted an opportunity to approve these multiyear proposals on a case-by-case basis. Yet when Secretary Carlucci sends a letter up here that in effect attempts to amend the fiscal years 1982 and 1983 budgets without an official Presidential budget amendment, and it is authorized at the level in Secretary Carlucci's letter, this Committee is precluded from having any flexibility in ensuring that our concerns about these multiyear procurements can be implemented in accordance with what the Committee's desires.

Dr. BORSTING. What are the dollars you are talking about for 1983?

Mr. MURPHY. The paper we have here which was submitted by Secretary Carlucci indicates that the President's Budget for fiscal year 1982 is two aircraft at $120 million, and in 1983 it is eight air-

craft at $829.1 million. Then they have a breakout of an annual buy proposal of producing 10 aircraft in 1983 versus a multiyear procurement of buying eight aircraft in 1983. If I read this correctly, the President's budget in 1983 is $829.1 million for eight aircraft.

Is that under an annual buy or a multiyear buy?

Dr. BORSTING. The President's Budget was submitted under an annual buy, and it was modified for a multiyear buy by the Carlucci letter.

Mr. MURPHY. Right, and the Carlucci letter indicates that under a multiyear procurement $823 million would be required.

Dr. BORSTING. Yes.

Mr. MURPHY. Is that correct?

Dr. BORSTING. That is correct.

Mr. MURPHY. I assume that $823 million would obviously be authorized, instead of $829.1 million. Now if the Committee wanted to move some of the significant funds that are programmed for advance procurement out through 1986 and bring some of it forward into 1985 or 1984, or even 1983, how could we do that if it is authorized at the $823 million level?

Dr. BORSTING. We would have to work with the authorization committees to do that.

Mr. MURPHY. The authorization committees have pretty much marked this up and they are going to conference very shortly. This is the point of my question. When you submit a budget like that, what flexibility does this Committee have to influence these multiyear buys when we are precluded from appropriating more money than is authorized in any given year?

Dr. BORSTING. This is true of any type of modification that one might make, whether we had submitted this in the budget or not. You have got the same problem. The same problem exists.

Mr. MURPHY. I realize that, but I just wondered whether there was some way that these multiyear procurements could be submitted on both an annual and a multiyear basis, and give us some flexibility to decide how we want to proceed on a program like this. In effect, what we tried to accomplish last year in having some inputs on multiyear procurements is null and void just by the very facts of life in the way these are submitted and budgeted.

Dr. BORSTING. Well, let me modify your last statement. I think you are having lots of inputs in the multiyear procurement because we are having this hearing. We are giving lots of data and so you are having lots of input. I think your basic question is that you would like some more input in structuring these multiyear programs before they get in the President's Budget.

Mr. MURPHY. This KC-10 multiyear proposal wasn't even in the President's Budget.

Dr. BORSTING. That goes back to my point, though. You would have the same problem even if it was in the President's budget. In other words, you are concerned, Pete, with the fact that you would like more of the economic order quantity or more end items fully funded earlier.

Mr. MURPHY. Right, and you have an internal study that indicates that the Services are reluctant to do that. They just don't want to put very much money up front. They would like to utilize

that money for other programs that they would like to press forward with, and I can understand that. It is a budgetary fact of life.

However, I don't think the Services should have their cake and eat it. If they want multiyear procurements, they ought to put up the dollars, and they ought to put the money up front instead of spreading the money out over four years of a five-year multiyear buy.

Dr. BORSTING. Going back to your basic point, how do we really get more flexibility into the budget system for multiyear, that is your basic point, and I think we could enter into a dialogue with you to work more informally with you earlier, maybe submit some alternatives. I would be willing to consider alternative submissions, working with the Committee to give more flexibility, because your question is a general question.

Mr. MURPHY. Yes.

Dr. BORSTING. It is a basic question.

Mr. MURPHY. The only reason I bring this up is that I want to let the members realize that the efforts we went through last year in trying to have an input to multiyear procurements is practically impossible to do so under the the facts of life. We just can't do it.

Mr. ADDABBO. The Committee can deny the money.

Mr. MURPHY. That is the only other alternative. The Committee just says no and you get no money.

Dr. BORSTING. We can work early with you, though, if you have some feelings on things like this. We could certainly work early with you in the budget submission.

Mr. MURPHY. I think probably we would like to see something like that.

Dr. BORSTING. This Committee has worked very well with the Department of Defense over the years. As the principal contact with the Committee, I would like to continue that. I don't see any insurmountable problems. I think we are bound to have initial problems in multiyear because we are still trying to determine the parameters of how we define good multiyears. I think that is a normal growing pain and a normal operating procedure quite frankly.

Mr. MURPHY. Thank you, Dr. Borsting.

Mr. ADDABBO. As has been brought out, sometimes multiyear procurement has problems, and the Committee will carefully evaluate each of them as we have in the past. We did it with the Blackhawk when we denied the multiyear funding there. We will annualize it for one more year and come back with program justification. The same careful consideration will be given to the 12 candidates you have listed here today.

Questions were raised before on the Multiple Launch Rocket System, and there will be questions that other members of the Committee will have.

TAO FLEET OILER

Admiral Sansone, you mentioned before relative to the TAO, you are putting out a proposal for a two ship buy, is that correct?

Admiral SANSONE. The TAO, I think, is a two ship buy with an option for three. I would like to provide that for the record.

Mr. ADDABBO. Provide it for the record because all you have is money for one. I want to know where you are going to find money for the second one.

Admiral SANSONE. Yes, sir, I will provide that for the record.

[The information follows:]

The proposed advanced multiyear contract for the TAO provides for one fiscal year 1982 ship, one fiscal year 1983 ship and an option for three additional ships in fiscal year 1984. The fiscal year 1982 appropriation covered the fiscal year 1982 ship. The fiscal year 1983 appropriation now before the Committee covers the fiscal year 1983 ship, plus advance procurement for the three fiscal year 1984 option ships. Exercise of the option for the three fiscal year 1984 ships will be contingent upon the passage of the fiscal year 1984 appropriation.

Mr. ADDABBO. Does the gentleman from Washington have further questions?

LSD-41 MULTIYEAR PROCUREMENT

Mr. DICKS. Are there any ships—the fleet oiler, what about the LSD-41, has that been considered as a candidate?

Admiral MILLER. That was a consideration for a candidate last year, and for varying reasons it was not included in the 1983 candidate list. However, we are now looking at the LSD-41 as a candidate in 1984, starting in 1984, to finish out the remainder of the program in multiyear.

Mr. BORSTING. In fact, let me just elaborate a little bit on the 1984 process, and Mr. Murphy's question. We will be in the next few months working very closely with the Services on a multiyear proposal for fiscal year 1984. In fact, there were three initially submitted. We started early in the POM process this year and the Services submitted multiyear candidates.

We have bounced some of those multiyear candidates back, and we will be looking at all multiyear candidates in the budget process, and I know my office will be very happy to do some informal liaison with this committee on those proposals, because we will have again a program budget decision document on multiyear this year that will be decided in the November/December time frame that we will then propose to you in January/February of next year.

B-1 BOMBER

Mr. ADDABBO. Will my pet project be part of the multiyear program, the B-1B?

Dr. BORSTING. What is that?

Mr. ADDABBO. I don't know. It is a museum piece that is being produced at $400 million a copy.

Dr. BORSTING. That is being considered by the Air Force for multiyear. It was given to us. We sent it back and said that we did not have enough documentation at this stage to give a yea or nay on the B-1.

Mr. DICKS. Will they include all the things that were not included in the $20.5 billion figure when they go to multiyear?

Dr. BORSTING. I thought this was a hearing on multiyear.

Mr. DICKS. It is a hearing on multiyear, but the question is this. In other words, as part of the selling of the B-1B to the Congress

BEST DOCUMENT AVAILABLE

are you going to put in all of the extras that weren't included and pointed out by the GAO?

Dr. BORSTING. As the GAO pointed out, certain things like simulators were included in other weapons systems that weren't in the B–1, and there needs to be standardization. There are also certain things that certain committees told us not to put in our total cost of weapons systems, but I am not sure we want to get into another B–1 hearing at this stage.

SUMMARY

Mr. ADDABBO. Not now, we will get into it at markup.

Dr. Borsting, as I mentioned earlier, I and most of the members of this committee support multiyear to a certain extent as long as it is fully reviewed, carefully reviewed within certain real parameters, and that is why most of the members of the committee opposed the House Armed Services Committee for opening up the entire Pandora's box and legislating the entire program rather than just a test program. We lost, and one of the fears we had in that debate was that we would see a proliferation of requests coming before us.

In earlier testimony by Admiral Miller, he was looking at 70 programs; and I imagine that if 100 contractors are out there, 99 of them feel that they have a multiyear proposal. There is going to be pressure on you, pressure on this Committee, and the Congress, by Members of the Congress who have defense factories in their districts, so I would just caution you as you look at this multiyear maybe to slow down.

We have gone into one and possibly a second year of multiyear procurement to see whether it is really working. As we covered in our hearing, the C–2, if suddenly that is cancelled, you would have $50 million down the drain, $50 million that could have been used for other needs. As you have testified and your charts which have been made part of the record show, there must be a tremendous front loading of funds. Those are dollars which will be taken away from other defense programs, add to our national debt, and will leave less funds for so-called people's programs, so we would ask you to carefully review these questions as they are presented to you, and I give the same direction to the Services.

Mr. DICKS. Will the chairman yield?

Mr. ADDABBO. We want it to work and it can work if we all follow that criteria. It has been my intention to continue this hearing at 1:30, but I think that perhaps your time would be better utilized and the Services, if they would carefully analyze the questions we have presented to them.

Hopefully we will have a markup some time before next year.

As I say, we will be looking forward to your answers to these questions, and we would ask you to be as complete and as definitive as possible in your answers, because it is a matter of deep concern I know to the Services as well as to the committee.

[CLERK'S NOTE: The questions submitted by Mr. Addabbo and the answers thereto follow:]

MULTIYEAR CANDIDATES FOR FISCAL YEAR 1983

Question. If this Committee would appropriate funds for four of your fiscal year 1983 multiyear candidates, what systems would you proceed with, and why?

Answer. If the Committee only appropriated funds for four of the twelve fiscal year 1983 multiyear candidates, we would be forced to reevaluate the candidates in light of that appropriation and all other pertinent factors then current. We would, however, be greatly distressed by any arbitrary constraints on our fiscal year 1983 multiyear procurement candidates. All programs proposed meet the criteria mandated by the Congress and each has undergone extensive review by the individual services and OSD.

DEGREE OF CONFIDENCE IN ESTIMATES

Question. GAO has suggested that resolution of the problem of basing estimates on "soft" data could be a 2 step process, request for authority to solicit proposals on both a multiyear and annual basis, with the ultimate decision to contract reserved by the Congress until firm proposals are obtained and anlyzed. What is your reaction to this proposal? Would this not place you in a better position to determine whether the multiyear requests will yield the savings that were anticipated?

Answer. First, we do not believe it will always be appropriate or necessary to solicit proposals on both a multiyear and on annual basis. The Defense Acquisition Regulation, for example, has long provided that solicitation on a multiyear basis only may be appropriate to eliminate the possibility of a first year "buy-in" when competition in follow-on acquisitions would be impractical. Regardless, the Department has no intention of entering into a multiyear contract without benefit of firm proposal analysis.

Reserving the ultimate decision to contract to Congress following receipt and analysis of firm proposals will unnecessarily slow down the contracting process and, in effect, will place the Congress in the role of Contracting Officer. We see absolutely no advantages to this proposal.

DISCOUNTING—CONSIDERING THE TIME VALUE OF MONEY

Question. You testified that Defense did perform discounting analysis of the fiscal year 1983 multiyear proposals. It is not clear, however, why your analysis was not provided to this Committee. You infer that the discount analysis was used for internal considerations, but that it is not needed by the Congress to evaluate budget requests. But what we are talking about here is not just a budget request, but consideration of which of two investment alternatives, multiyear contracting versus annual contracting, should be selected. In such instances, it would appear that OMB Circular A-94 requires that discounting analysis be performed and submitted as part of your budget justification in order to make a valid comparison. Please clarify your position on this.

What was the basis for deciding not to provide Congress this information so we can make decisions with the same information you had?

Answer. Discount analysis in accordance with OMB Circular A-94 is performed by DoD and the Services as a routine part of the process of making many investment decisions. We do not routinely submit the results of these analyses to OMB or Congress as part of our Budget Justification process. A-94 does not require submission of discount analyses; however, GAO frequently reviews our analyses. This is true in the case of the multiyear procurement candidates. GAO reviewed our analyses done in accordance with OMB Circular A-94 and suggested that A-94 was too stringent a test. GAO recommended that we discount at 13.9 percent against then year dollars rather than 10 percent against constant dollars which is in accordance with A-94.

Question. You also state that in performing an analysis using a "constant" dollar basis, you still project a significant savings. What did those savings amount to, and how does that compare with your original savings estimates?

Answer. Savings for the 12 fiscal year 1983 multiyear candidates are estimated at $1,315.9 million in "then year" escalated dollars. In constant fiscal year 1982 dollars, which eliminates the impact of inflation, savings are $718.7 million.

THE FISCAL YEAR 1982 MULTIYEAR PAYOFFS

Question. Dr. Borsting, you state that fiscal year 1983 contains the first payoffs, $245.0 million, from multiyear procurements begun in fiscal year 1982. Please explain what you mean by payoff.

Answer. Had Congress required procurement of the ALQ-136, UH60A airframe and the F-16 under the annual rather than the multiyear method, then we would have had to program an additional $245 million in fiscal year 1983 in order to procure the budgeted quantities.

APPROPRIATION ACT MULTIYEAR PROCUREMENT LANGUAGE

Question. Dr. Borsting, you inferred that the language in Section 769 of the fiscal year DoD Appropriation Act caused Defense to lose multiyear savings opportunities. Could you please clarify your position on this issue?

Answer. Fortunately, we have not yet been precluded from executing a multiyear procurement for a major weapon system because of Section 769. I am simply suggesting that, should such an opportunity arise for a major weapon system subsequent to the passage of the fiscal year 1983 Appropriations Act, it would be desirable to obtain approval from our oversight Committees rather than being limited to the opportunities known at the time of our budget submission.

IS CONGRESS LOSING FLEXIBILITY

Question. Dr. Borsting, you assert that because the Congress is being asked to fund economic order quantity (EOQ) buys to termination liability, that the Congress is losing very little flexibility by creating multiyear contracts. How do you reconcile this view with the fact that on some programs the subsequent years end items

will have been advance funded by 30 percent or more, and in an extreme case, the KC-10 by 60 to 90 percent?

Dr. BORSTING. My statement regarding loss of flexibility relates to the issue of whether multiyear procurement creates the need for future appropriations to pay for unfunded, recurring costs in the event of subsequent cancellation. It does not. However, this does not mean that I am advocating such cancellations. Clearly, our advance buying would involve losses if the multiyear procurement were cancelled prior to completion. For this reason, both the Department and the Congress have rightly insisted that only stable programs be selected for multiyear procurement.

The KC-10 program illustrates an interesting irony. The Air Force, in response to the Committee's questions, has provided alternative TOA profiles which diminish the relative amount of advance procurement funding. This would be accomplished by moving outyear TOA forward. However, under all alternatives the outlay profile and delivery schedules are the same. This suggests that the true measure of Government commitment in multiyear procurements is the ratio of multiyear procurement outlays to annual procurement outlays—not the degree of advance procurement TOA.

PROPOSAL TO STRIKE APPROPRIATION ACT LANGUAGE REQUIRING SPECIFIC APPROVAL OF MULTIYEAR CONTRACTS FOR MAJOR WEAPON SYSTEMS IN APPROPRIATION ACTS

Question. You state on page 4 of your statement under the heading "Section 769 of the fiscal year 1982 DoD Appropriations Act" that the requirement for Committee approval of major weapons systems in the Act "forecloses opportunities for multiyear procurements, which arise during execution of major system procurements. We will lose the opportunities to save money through multiyear procurements because of this language."

1. Last year, the Department stated that it expected the multiyear contract proposals to become incorporated into the regular budgetary, authorization, and appropriations process.

Please state why this language forecloses the savings of money?

Answer. We have incorporated all known multiyear procurements involving either expanded advance procurement or cancellation ceilings greater than $5 million, into the regular budgetary process. I am simply suggesting that, if any additional opportunities for savings through multiyear procurement for major weapons systems come along, we will be able to work out a Congressional approval at the Committee level.

Question. Our experience and the Department's position with multiyear contracting has been that it carries risks to the Government with it as well as savings. The Office of Management and Budget, the General Accounting Office, and the Government Operations Committee all recommended a cautious approach to approval of multiyear contracting for major weapons systems.

Since the approval is required only for major weapons systems, why can't you simply request the necessary approval in supplemental actions?

Dr. BORSTING. If the new idea requires more budget authority, we could use the supplemental process. However, approval of supple-

mentals is not always timely and the amount of additional funds may be within our reprogramming capability. We would like the option of working with the Committees.

IS ADVANCED PROCUREMENT UNDER MULTIYEAR CONTRACTING BEING ABUSED

Question. Under multiyear contracting, advanced procurement has been expanded from a purchase one year in advance for usable components to a purchase to cover several years' duration which may include materials and parts as well as components.

GAO testified that several of the fiscal year 1983 multiyear candidates will have as much as 30 percent of the value of future year end items funded through advance procurement.

Doesn't this 30 percent level of "advance procurement" come very close to the Department's own definition of incremental funding, which is purchases for which future year appropriations are required in order to complete items or tasks, because funds are not available at the time of contract award to complete a fiscal year's quantity of end items in a finished, military, usable form?

Answer. "Advance procurement" is an exception to the full funding principle. In non-multiyear situations we limit its use to lead time considerations. In multiyear procurement situations, we have expanded its use for reasons of economy. Since we limit the multiyear procurement technique to a select few number of programs, the advance procurement exception is in no danger of becoming the rule and destroying the full funding principle.

Question. The OMB Cirular A-11 requires full funding, the Department has stated its adherence to full funding, and this Committee made it abundantly clear in its report last year that multiyear contracting was an issue separate and apart from the full funding policy which the Committee has adhered to over the years.

Yet the 30 percent level of advance procurement taken in bits and pieces prior to the year in which the end item is purchased, from all appearances could be merely an incremental approach to procurement funding. Why shouldn't the Committee refuse the multiyear requests that involve such large piecemeal funding of end items on the grounds that the Department is not following the full funding policy?

Answer. I believe that we have carefully tailored a funding method which both preserves the "full funding" principle for the procurement title and achieves the savings multiyear procurement has to offer. I think it would be a mistake to pass up this opportunity for savings in order to adhere to a set of funding groundrules which we constructed before the current multiyear procurement initiative was begun.

Question. What practical distinction does the Department make to ensure that the Services are indeed proposing legitimate advance funding, and not slipping into incremental commitments to major purchases for other Congresses in future years?

Answer. The practical distinction is the simple fact that multiyear procurements are few, unique, and subject to their own special set of funding rules. They should not be undertaken lightly. We are, in effect, asking the Congress to join us in the undertak-

ing. We have insisted that any request from the Services for expanded advance procurement be coupled, in the same budget year, with an approved multiyear procurement. This is to preclude the use of advance procurement to end run the full funding principle.

COMPLETED CONTRACT METHOD OF ACCOUNTING

Question. The completed contract method of accounting generally permits deferral of income declaration and payment of taxes on that income until a contract is completed. Use of the method means lower costs for defense contracts, but it also means lower revenues to the U.S. Treasury. Please comment.

Answer. The completed contract method of tax accounting may result in lower costs of defense contracts because the deferred taxes payable represent a source of financing to the defense contractor. Since this source of financing is at little or no cost, the contractor can agree to lower prices than he otherwise would be able to do if he had to obtain the financing through private or commercial sources at market rates. With respect to the Treasury, it is not certain that the method lowers revenues over the long run. The method does affect the timing of the collection of taxes, deferring them until the contract is completed, instead of collecting them on an annual basis. However, to the extent that the source of financing may actually result in a higher ultimate profit to the contractor, because the contractor can avoid borrowing from commercial sources, then the method may result in greater, albeit later, revenues to the Treasury than would occur if the percentage of completion method were used.

Question. The GAO notes that multiyear contracts under the completed contract method result in more extended tax payment deferral compared to annual contracts. Wouldn't the use of multiyear contracts generally mean a greater loss to the Treasury than under annual buys under the completed contract method of accounting? If not please explain.

Answer. We do not believe the use of multiyear contracts will result in a greater loss to the Treasury than under annual buys using the completed contract method of accounting. While the timing of the outlays and the tax revenues will be different, we are convinced that the substantial overall reduction in prices of 10–20 percent will far outweigh the slight decrease in income and the cost of money associated with the differences in revenue collection timing.

Question. The GAO report to this committee also states that "several of the 12 contractors follow this method. The cost of money associated with this added deferral period could also affect net savings to the Government." Have you factored into the cost and savings estimates for the multiyear contract initiatives before this committee this revenue loss due to the use of the completed contract method of accounting? If so what are your findings for the fiscal year 1982 contracts, and for the fiscal year 1983 contracts? If you are not making such calculations, please explain why?

Answer. We have not estimated any "revenue loss" resulting from the use of the completed contract method of accounting on multiyear contracts because we do not believe the completed con-

tract method of tax accounting is particularly germane to the question of savings which result from mutliyear contracts. This is so for two reasons.

1. The completed contract method of tax accounting was established primarily to recognize the risk associated with performing to fixed commitments over long periods of time and the uncertainty as to the amount of income, if any, which would ultimately result from the contract. If the contract results in a loss or a breakeven (as many commercial and defense long-term contracts do), then there is no tax liability or lost revenue to the Treasury.

2. If the contract ultimately is profitable, then the only effect of the multiyear contract is to defer the taxes to be paid to the Treasury. On the other hand, if the contract is unprofitable the tax reduction associated with the loss is also deferred until the contract is completed.

There has recently been much discussion over the shortcomings of the regulations covering the completed contract method of tax accounting. The Senate in its recently passed tax bill (H.R. 4961), provides direction to the Treasury Department to modify its regulations in a manner to correct these perceived shortcomings. Those modifications are to:

"(1) clarify the time at which a contract is to be considered complete,

(2) clarify when: (a) one agreement will be treated as more than one contract, and (b) two or more agreements will be treated as one contract, and

(3) properly allocate all costs which directly benefit, or are incurred by reason of, the extended period long-term contract."

This provision is likely to survive intact in the conference committee discussions over the bill and be enacted into law. While it is not now known exactly what form the modified regulations will take, the modifications will remove the perceived abuses of the current method and will further reduce the importance of the completed contractcost method of tax accounting as a factor to be considered in multiyear contract savings.

MULTIYEAR CONTRACTS AND CONTROLLABILITY OF THE DEFENSE BUDGET

Question. Mr. Controller, you state on page 3 of your statement that Congress loses very little flexibility with multiyear contracts, and that the program should not be viewed as an expansion of the uncontrollable part of the DoD budget. That does not square with Dr. DeLauer's comments last year: "We do recognize, however, that some potential disadvantages exist. For example, long term (multiyear) commitments add to risks and they result in a decrease in flexibility in the annual budgeting, authorization, and appropriation processes. In the past, these matters have been perceived by elements of the Administration and the Congress to be sufficiently important to inhibit the use of multiyear contracts." What has happened in the space of a year to change the Department's view to the opposite of what we heard last year?

Answer. The Department has not changed its view. The statement that Congress loses very little flexibility with multiyear con-

tracts refers to the absence of a need for future appropriations in the event of a cancellation, a need avoided by our funding methodology. The statement that the multiyear program should not be viewed as an expansion of the uncontrollable part of the budget is merely recognition that cancellations can be affected and, without the need for supporting appropriations.

Question. Your position does not square with the whole rationale for multiyear contracting, which is that it should provide stability of program funding and level of commitment to the private sector. That is why the Department establishes special criteria for MYC candidates. And that is why this Committee earmarks these funds, once it has approved a multiyear contract. How can you say that you have the flexibility to cancel or change a multiyear contract and still provide the assurances of stability that are necessary to attract small business to the defense sector and motivate investments that will result in production efficiencies? Once that commitment is made, doesn't it represent an expansion of the uncontrollable part of the DoD budget—that is that part of it that we have more of a commitment to than the annual funding requests in future budgets?

Answer. We will never enter into a multiyear contract with a view toward future cancellation. While cancellation will be possible if clearly in the national interest, it will never have been intended. Multiyear candidates are drawn from those programs which the services, OSD and the Congress believe will go forward regardless of contract type. Multiyear merely provides the means of capturing the savings potential that exists for many longer term programs and reenforces the shared belief of program stability for periods of greater than one year.

Question. It is the nature of multiyear contracting that costs are pushed upfront and real savings do not accrue till near the end of the contract. It follows that cancellation at an early stage precludes the expected savings and could result in further losses due to the early purchase of parts and supplies that are now unusable. Your whole point seems to be just because Congress appropriates to cover those losses in advance, no flexibility is lost. Does it make any difference to the taxpayer whether the losses are covered in advance, or wether they require an additional liquidating appropriation? Don't we as public officials owe the taxpayer the responsibility to avoid those losses? Isn't that why we have established such a careful review policy for selecting multiyear contracting candidates—to avoid the risk of losses?

Answer. Our point on funding is that we are not creating a "hidden agenda" for some future Congress. The current Congress is being asked to appropriate sufficient funds to cover the liability the Department is proposing to establish. If circumstances do change such that cancellation is warranted, that future Congress will be free of the pressures of dealing with large cancellation charges requiring supporting appropriations. We do owe the taxpayer the responsibility to avoid losses due to cancellation and that is why we perform careful reviews of all multiyear candidates.

MULTIPLE LAUNCH ROCKET SYSTEM

Question. The Army proposes to enter a five year multi-year contract with two one-year options for procurement of a total of 344,356 Multiple Launch Rocket System (MLRS) rockets. The total value of the multiyear contract is $1.7 billion with estimated savings of $193.4 million. Since the initial 5 year contract involves procurement of economic order quantity materials for the two option years, the Congress is being asked to commit to a $1.7 billion seven year sole source procurement. What analysis was done to demonstrate that a sole source procurement was more cost effective than the original competitive procurement strategy?

Answer. The basis for analysis of alternative acquisition strategies has been the MLRS Baseline Cost Estimates which include Design to Unit Production Cost (DTUPC) learning data received competitively from Vought and Boeing and the Army Second Source Study. The multiyear strategy, when compared to annual sole source procurements, results in a $193.4 million savings in then year dollars and a savings of $13.7 million when discounted at 10% in accordance with OMB Circular A94. The second source strategy, when compared to annual sole source procurements, results in a savings of $64.4 million in then year dollars and a loss of $22.8 million when discounted at 10 percent, in accordance with OMB Circular A94.

Question. Why did the Army change its mind?

Answer. The Army changed its mind as a result of the comparative analysis of multiyear, second source, and annual sole source procurement in then year and discounted dollar savings, and the recent legislative changes concerning multiyear procurement. Prior to the legislative changes only the competitive second source strategy was available to potentially control costs as compared to annual sole source procurements.

The Army still considers the second source strategy to be more advantageous than annual sole source procurement. However, the current multiyear acquisition strategy is clearly more advantageous than the second source approach. The Army strategy now is to obtain a proposal for multiyear procurement for the remainder of the MLRS planned program and compare these bid prices against the previously obtained competitively proposed Design to Unit Production Costs. They Army will make its decision based on firm contract proposals rather than cost studies or budgeting estimates. The current strategy obtains the multiyear proposal while there is a viable effective threat that a second source producer could be solicited if the multiyear proposal is not consistent with costs previously forecast during a direct competitive environment. In essence, the Army has not changed its mind about competitive procurement strategy, but is utilizing that prior strategy to enhance the greater savings potential now offered by multiyear procurement which was not previously available.

Question. According to information from the GAO earlier this year, the procurement strategy was being analyzed using a total quantity of 190,000 rockets rather than the original quantity of 360,000 rockets.

96-942 O - 82 - 43

A. Is the report from GAO true?

B. What number was used in deciding for a sole source procurement?

C. What would have been the result if a 360,000 program had been used?

Answer. The report from GAO is not entirely true. The Army analyzed the procurement strategy against total quantities of 190,000 rockets and 360,000 rockets.

The Army Second Source Study demonstrates that for quantities of 190,000 rockets, the savings obtained from a second source strategy are not sufficient to offset the initial investment costs of developing that source, i.e., a net increase rather than saving. Therefore, a procurement of 190,000 rounds would dictate a multiyear or sole source strategy rather than second source.

The approved MLRS program remains at 360,000 rockets and has been constant since Defense Systems Acquisition Review Council (DSARC) I in 1977. This quantity was used in evaluating the MLRS acquisition strategy involving either multiyear procurement or second source.

The result of the Army analysis is based on the approved 360,000 rocket program. It is this program that the Army has presented for approval.

Question. According to GAO, another contractor participated in the source selection, and is capable of producing this rocket in available Army facilities with only a nominal start-up investment.

A. What specifically has the Army done to determine what companies might be interested in being a competitive second source supplier?

B. What contractors have expressed an interest in this program?

C. What consultation did the Army conduct with industry in deciding that a sole source procurement was the preferred alternative?

Answer. The Army has done nothing specifically to determine what companies might be interested in being competitive second source suppliers.

Emerson, Aerojet, Hercules, and Thiokol have indicated an interest in competing to be a second source for MLRS rockets and launch pod/containers.

The Army requested cost data from Vought (who consulted in turn with their major subcontractors) in deciding that a multiyear procurement under the threat of a second source competition would be cost beneficial.

Question. Does the proposed rocket producer possess a unique capability which will enable it to provide the claimed savings as a multiyear contractor rather than opening the buy to competition?

Answer. Vought, the present and proposed multiyear rocket producer, has several unique capabilities that enable it to be a highly competitive supplier for whom the added economics of advance materials purchases through multiyear can be a significant benefit to the government over development of a second source:

A. Created a separate division to offload high corporate overhead.

B. Located in low cost labor area.

C. Collocated with motor and launch tube subcontractors to reduce transportation costs.

D. Development of automated production systems to minimize labor cost, e.g., warhead loading line with unique munitions handling/loading machinery.

E. Facilitization to produce at 6000 rockets/month (2-8-5).

Question. There has been significant foreign interest in the MLRS program, and in fact, four European countries have agreed to co-production.

A. Do you expect foreign military sales of the MLRS? About how many?

B. How would significant foreign military sales affect a multiyear contract and your decision not to develop a second source?

Answer. Yes, we expect foreign military sales to the extent of about one-half of the US procurement quantity. Based on contractor marketing estimates and foreign government inquiries, a preliminary estimate of the foreign military sales from the US production source may be as much as one hundred and fifty launchers and one hundred and fifty thousand rockets.

Significant foreign military sales would not affect the decision to proceed with the multiyear contract. The multiyear contract will encompass the US planned procurement quantity. Additional facilitization for foreign military sales must be paid for by the contractor or he may use excess production from the US government facilitized production line, just as any potential second source producer would do.

Question. GAO testified that Defense's estimated savings of $193.4 million discounts to only $27.7 million, or about 1.5 per cent of the cost of the seven year requirement on an annual contracting basis. Is this sufficient to justify a multiyear contract or a sole source procurement?

If the toal MLRS production costs are used instead of the cost of the rockets, the estimated $193.4 million savings comes to only about 5 per cent. How does this justify a seven year sole source procurement?

Answer. Discount theory takes into account the time value of money for decision analysis. It appears that the GAO analysis failed to discount the investment at 13.9 percent while they discounted the savings. In order to make a proper analysis, both the investment and the savings must be discounted. If the investment costs are discounted at 13.9 percent, as were the savings of $27.7 million, the percentage savings is 3.9 percent on a discounted basis. The Army believes a $27.7 million discounted savings is strong justification for a multiyear procurement.

The MLRS acquisition strategy for multiyear procurement anticipates $193.4 million of savings on a contract value of $1683.7 million and a corresponding program total value of $3033.9 million when all costs are shown in then year dollars. This equates to an anticipated 11.5 percent savings for the multiyear procurement contract and a 6.3 percent savings for the total remaining program. The Army believes that a 11.5 percent savings against the total contract value is sufficient to justify multiyear procurement. Computing the multiyear savings as a per cent of total program cost distorts the savings because of the base utilized in the computation.

The proposed MLRS multiyear acquisition affords savings in both discounted and then year dollars, which clearly supports validity of the Army request.

Question. How does Defense reconcile the need for an expanded Defense industrial base, and the proposed action to develop only one supplier of a high volume production rocket?

Answer. The MLRS prime contractor has committed to expend approximately $50 million in capital facilities and tools to establish the MLRS production facility. The commitment by the Army via a multiyear contract will encourage further investment by the prime contractor and its vendors. Vendors that were very reluctant to participate in a series of annual MLRS procurements have indicated a willingness to participate with some of their own investment in a multiyear venture.

In addition, a chronic problem in industry has been the repeated expansion and contraction of the business base. A multiyear contract allows long term commitments with vendors and enables those companies to maintain even workloads and retain qualified personnel.

Question. Isn't the proposed action considered counter to Defense's proposed initiative to expand competition?

Answer. We do not consider the proposed multiyear to be inconsistent with initiatives to expand competition. The MLRS Validation Phase was done competitively, resulting in a strong competition for the remainder of the development and the initial Low Rate Production contracts. This competition resulted in the expected unit cost of the rocket being reduced approximately 25 percent by the competitors. The degree to which the 25 percent savings can be carried over into the multiyear contract can be made by comparing the multiyear proposal with the Design to Unit Production Costs (DTUPC) proposed by both Validation Phase contractors for the Production Phase. The government already has these DTUPC figures for comparison and can use them along with a current "should cost" study to measure the savings in the multyear proposal without the expense of facilitizing and qualifying a second source over two–three years (1983–1985). The use of the Validation Phase competition was very effective and the Army believes there is now very little to be gained via further competition. The constraint of creeping cost growth along with economic order quantity purchase savings can be achieved with multiyear contracting. We believe the multiyear approach is consistent with our initiatives to cause industry to invest in the defense business, which has been done in this case.

Question. How many production MLRS carrier/launchers and rockets have been delivered to date?

Answer. As of 3 August 1982, the following equipment has been delivered to the government: 51 Launch Pod Containers with 306 Rockets, from Vought; 8 Carrier Vehicles from FMC, of which 4 are at Vought's Camden plant for assembly with other launcher components. Four are en route to Camden.

The first launcher delivery to the government is scheduled for the week of 16 August 1982.

Question. What testing has been done on production configuration carrier/launchers and rockets?

Answer. Testing on production configuration equipment includes:

A. 100 production prototype rockets flight tested.

B. 34 production line rockets flight tested.

C. 54 production rockets have undergone or are undergoing environmental testing (vibration, shock, humidity, etc.). Six of these have been flight tested.

D. 6 production prototype launchers have been undergoing Force Development, Test, and Experimentation training for the past month.

Question. What are the scheduled starting and completion dates for Production Qualification Tests, Development/Operational Testing III, and other post-production tests?

Answer. Scheduled starting and completion dates for Production Qualification Tests (PQT), Development/Operational Test (DT/OT) III and other post-production tests are:

PQT: Rocket Flight and Environmental Tests May 82–Dec. 82; Launcher Mobility and Endurance Aug 82–Jan 83; Launcher Environmental Dec 82–Feb 83.

DT/OT III: Oct 82–Jan 83.

Fly-to-Buy Rocket Flight Testing: Nov 83–end of production (1989)

Stock Pile Surveillance/Shelf Life: Fiscal year 84–fiscal year 05.

Question. What have been the results of these tests to date?

Answer. Maturation development flight tests have demonstrated the potential to meet all program objectives with unadjusted reliability of 0.9. All thirty-four Production Qualification flight tests to date have been successful. Corrections to overcome self-propelled launcher loader reliability problems with earlier R&D prototypes have been applied. Early Force Development, Test and Experimentation results indicate that the corrections have eliminated the problems.

Question. GAO reported in February that certain technical problems in the MLRS progam still remain unresolved. These include submunition dudding and cracking, vehicle transmission problems, fire control system hardware and software changes, and launcher component hardware changes. Do these not suggest that MLRS is not sufficiently mature for a multiyear contract?

Answer. At the time of the GAO report in February, MLRS was in the process of proving the resolution of the reported problems. The submunition dudding and cracking problem and the vehicle transmission problems experienced on early prototypes have been resolved. However, neither of those items is involved in the multiyear procurement. The new fire control system items and refinements of some launcher components, along with the software, have proceeded through command, control, and communication tests and are now involved in the Force Development Test and Experimentation series with successful results. There is no indication of problems that will impair the successful and on-schedule completion of development. We believe the MLRS is an excellent candidate for a multiyear contract based on its design stability.

ALQ-136 JAMMING SYSTEM

Question. The Army proposes to procure 600 ALQ-136 Radar Jamming Systems for the AH-1 series attack helicopter with a three-year multiyear contract from beginning in fiscal year 1982 and ending in fiscal year 1984. The three-year contract is estimated to cost $83.6 million with savings of $24.9 million over an annual contract program.

The estimated savings are 22.8 percent. Why are the savings for this program so much greater than those estimated for other multiyear contracts?

Answer. Approximately 80 percent of the AN/ALQ-136 costs is in hardware, and Multiyear Procurement allows economical order quantity of purchased components which results in a greater percentage cost savings. The AN/ALQ-136 is not a labor intensive subsystem.

Question. The total program quantity has changed from 310 estimated in last year's justification to 715 estimated in this year's justification. The proposed multiyear procurement will result in a total of 680 systems. With these numbers changing, how can you justify this as a suitable program?

Answer. The requirement for AN/ALQ-136s for the attack fleet has remained constant at approximately 1,500 units. The 310 estimated in last year's justification was constrained by availability of funds. The 515 (not 715) came about from an increase in funds available in the fiscal year 1982 Budget Amendment. The 600 (not 680) includes the additional units that can be procured through the savings achieved in the Multiyear Procurement. The 680 number comes from the 600 to be procured in the Multiyear Procurement and 80 that were purchased in the fiscal year 1980 contract.

Question. Do you have a validated technical data package for the ALQ-136?

Answer. Yes. First article tests have been completed on the radar jammer, this flight line test set and the bench test set from the Fiscal Year 1980 production contract. These tests validate the technical data package. First deliveries of the production AN/ALQ-136 have been accepted and the production systems have met all performance requirements.

Question. Do you intend to compete this multiyear procurement? If not, why not?

Answer. It was competed and two proposals from industry were received on 2 June 1982. The source selection process is on-going.

Question. Will the second multiyear contract be competed for Fiscal Years 1985-1987? If not, why not?

Answer. Yes, a second competitive multiyear procurement is contemplated for Fiscal Year 85-87.

Question. What kind of contract will be used for this procurement?

Answer. Firm Fixed Price (FFP) is the planned contracting method.

Question. What contract proposals do you have in hand to validate your estimated saving from a multiyear approach?

Answer. The Fiscal Year 1980 contract provides the basis for cost confidence in the AN/ALQ-136 annual buy estimate. This estimate

for an annual buy is based on actual cost. There are two contractor proposals under evaluation from the Multiyear Procurement request for proposal released to industry in April 1982. The competitive proposals for this multiyear buy have shown that the Multiyear Procurement estimate was accurate (conservative by approximately $2.0 Million). Source selection is on-going and final negotiations may result in additional savings.

Question. How were the estimated savings from this proposal derived?

Answer. The annual program was constructed based on known costs from the Fiscal Year 1980 single year production contract. The multiyear program was constructed based on estimates known to be achievable with economic order quantities. Discussions were held with the current contractor who also estimated the savings from his vendors. The proposals received from industry validate the savings of the Multiyear Procurement.

Question. Another configuration of the ALQ-136 will be bought for other airframes beginning in Fiscal Year 1984. What other airframes and quantities are involved?

Answer. The current AN/ALQ-136 Multiyear Procurement (Fiscal Years 82-84) is configured to countermeasure the air defense threats to AH-1S and AH-64 aircraft. Additional quantities are required of this version. The additional quantities are planned to be procured beginning in Fiscal Year 1985. Another version (ALQ-136(V)2) is under consideration for Special Electronic Mission Aircraft (OV-1, RV-1, RC-12 and EH-60A) in the Fiscal Year 1985 and beyond time frame. A quantity of 230 of this version of the system is required.

Question. What consideration has been given to combining all requirements and establishing a second source for this system?

Answer. Consideration has been given to combining all the requirements and a second competitive multiyear program for AN/ALQ-136 (all versions) is planned. The Electronic Warfare business base is adequate without second sourcing.

Question. According to the multiyear procurement justifications the ALQ-136 radar jammer is involved in a preplanned product improvement program. How much is this P3I effort costing, and where is it funded?

Answer. The AN/ALQ-136 is a Product Improvement Program for the individual aircraft modification line. There is RDTE funding for upgrading the AN/ALQ-136 to counter new threats as they emerge.

Question. What product improvements are being considered?

Answer. There are P3I improvements which are in Research and Development for the AN/ALQ-136. These are frequency extensions to counter new threats, digital radio frequency memory, and software efforts to update the AN/ALQ-136 to counter other new threats. These changes will be incorporated as software (reprogrammable) modifications or modular updates. The jammer is designed to accommodate these updates.

Question. If we are making product improvements to this system, how is this a sufficiently stable configuration to justify a multiyear procurement?

Answer. The AN/ALQ–136 is designed to counter certain current threats in Soviet/Warsaw Pact and Third World inventories today. The AN/ALQ–136 is a flexible system which can be updated with software changes and has room for additional circuit boards so the jammer can be modified in the future to counter new threats.

Question. Given the rapidly and continually changing electronic warfare threat which requires frequent modifications to our equipment, would it not make more sense to have annual, competed contracts in order to maintain some flexibility?

Answer. The AN/ALQ–136 has the flexibility so that it can be updated to counter changes in Electronic Warfare threats. The jammer is designed with additional circuitry space and reprogrammable software to make the system easy to upgrade. Changing configuration of equipment each year would lead to a difficult logistics situation, therefore, modifications will be made as block improvements.

Question. You propose to begin this program in fiscal year 1982, the current fiscal year, but are requesting no additional funds for advance funding. The multiyear justifications indicate that $26 million is actually included in the fiscal year 1982 plan for advance funding for fiscal year 1983 and fiscal year 1984. How can you begin this program without requesting additional funding?

Answer. The fiscal year 1982 amended budget increased funds available for the AN/ALQ–136 to $55.4 million in fiscal year 1982, $14.5 million in fiscal year 1983 and $13.7 million in fiscal year 1984. With these funds, it was possible to construct a Multiyear Procurement which will purchase more units and allowed full funding in the first year for Economic Order Quantity materials.

Question. Does this proposal amount to making the program fit the dollars rather than the other way around?

Answer. The dollars were structured to support a 200 quantity per year multiyear program with fiscal year 1982 amended budget funds. The quantity of 200 per year is an economic production rate.

Question. An estimated $2.4 million of the savings comes from cost avoidance from tooling. How do you justify this as a savings, and how was the estimate derived?

Answer. The avoidance of $2.4 million in tooling is possible because of not having to compete the program each year. A new contractor would have to tool up since tooling is not transferrable. The estimate was derived from the present production contract and experience on other similar contracts.

Question. An estimated $2.4 million of the savings comes from cost avoidance from testing. How do you justify this as a savings, and how was the estimate derived?

Answer. The First Article Testing (FAT) would have to be reconstructed for each new annual program contractor. This is avoided with the multiyear procurement because the FAT only has to be conducted one time on the multiyear program to validate the manufacturing processes. The estimate was derived from the experience on the present production contract and other similar contracts.

Question. What specific evidence can you provide that this multiyear proposal will enhance the industrial base?

Answer. The stability and economic order quantity provided by the multiyear procurement have generated increased interest at

the vendor level in providing various electronic components. Depending on the contractor selected; there will be several vendors providing components for electronic warfare units that have not been interested or involved in any aircraft survivability equipment procurements before.

Modular Universal Laser Equipment

Question. The Marine Corps is proposing to procure the Modular Universal Laser Equipment (MULE) under a multiyear contract for fiscal year 1983 to fiscal year 1985. The total contract will be $87.8 million for 340 systems, and will buy out the Marine Corps requirement for this equipment. Total savings are estimated to be $5.5 million or 5.9 percent. What is the MULE? Briefly describe its characteristics and use.

Answer. MULE is designed to provide forward observers the capability to accurately determine range and location of targets. MULE will enhance the effectiveness of conventional munitions in addition to providing laser designation for all surface and air delivered laser guided munitions. MULE will designate stationary targets out to ———.

Question. The MULE is the only multiyear procurement candidate to be proposed by the Marine Corps. What other candidates were proposed and rejected within the Marine Corps?

Answer. There were no other candidates proposed and rejected within the Marine Corps.

Question. What other candidates were proposed and rejected by the Navy and/or OSD?

Answer. There were no other candidates proposed and rejected by the Navy and/or OSD.

PROPOSED SAVINGS

Question. The total savings from this multiyear contract is $5.5 million. GAO has estimated that when a 10 percent discount rate is applied, the savings become only $1.5 million in constant dollars. Is this not a rather small benefit when considering the loss for flexibility under a multiyear contract?

Answer. The projected savings from this contract are small when compared to other larger dollar value multiyear contracts where the savings are proportionately greater. However, the savings are valid, and provide a desirable cost benefit to the government.

Question. What contract proposals do you actually have in hand to support your cost estimates of a multiyear contract and for a series of annual contracts?

Answer. The U.S. Army Missile Command (MICOM), the contracting agent for Marine Corps, has received a fixed price incentive fee multi-year contract proposal from the Hughes Aircraft Company.

CONTRACT TYPE

Question. What type of contract will be used for this multiyear procurement?

Answer. The Marine Corps will attempt to negotiate a firm fixed price contract through its contracting agent.

Question. What circumstances would cause the cost of the contract to change from the $87.8 million?

Answer. The only circumstances that would cause the cost of the contract to change are those that are resident in the contract. In general there should be no changes once the firm fixed price contract is established.

DEGREE OF COST CONFIDENCE

Question. Your justification material characterizes the degree of cost confidence as "moderate". Why is the risk considered to be moderate rather than low?

Answer. The risk is considered moderate because the only cost estimates available for use to-date were derived by using design to unit production cost estimates and experience with the Ground Laser Locator Designator.

Question. The first procurement of MULE was funded in fiscal year 1982, and the contract was to be signed last February. When was the first production contract signed?

Answer. There has been no production contract signed to date.

Question. What type of contract was it?

Answer. This question is not applicable.

Question. Last year, we were told that the $20.7 million in fiscal year 1982 would procure 57 sets. Now we find out that it will require $21.2 million to procure only 40 sets. What accounts for this cost growth?

Answer. Reestimates made by MICOM (Army Missile Command) are the basis of projections. As these estimates change, the cost data also changes.

Question. How do we know that there will not be similar cost growth under a multiyear contract?

Answer. There will not be similar cost growth under the multiyear contract because it will be a firm fixed price contract.

Question. How can you declare cost confidence in this program when there has been significant cost growth just this year?

Answer. Cost confidence is described as "moderate" due to the absence of a more extensive basis for cost estimates. We will be more confident when we go to contract.

Question. Multiyear contracting was intended to be used for mature systems that have been in production for several years. Why are you proposing a system that has just entered production?

Answer. Initial procurement of MULE envisioned four small, single-year procurements which offered no economic advantage and were, in fact, quite expensive due to the small fragmented buys. Although the MULE was not a mature system in that no production experience was available, it was reasonably anticipated that multiyear procurement would offer significant savings through benefits to both the prime contractor and sub-contractors. the risk of using MYP contracting appeared acceptable.

Question. How can you be confident in the cost to manufacture a MULE when the first one will not come of the production line until 1984?

Answer. This will be a sole source contract with the contractor which conducted R & D on the MULE and which is thoroughly familiar with the production process (time and material) involved. With this background we are confident that the contract awarded will reflect an accurate manufacture cost.

Question. Why was approval for service use for the MULE delayed from August 1981, estimated last year, to the current estimate of March 1982? Was ASU actually achieved?

Answer. The MULE will be a sole source procurement. The vendor did not respond with firm cost data in sufficient time to allow for the MSARC to be completed by the planned ASU dates. Marine Corps Systems Acquisition Review Council is necessary before ASU can be granted. MSARC, and ASU, are anticipated shortly.

STABILITY OF REQUIREMENT

Question. One of the main uses of the MULE is to provide laser designator for the Copperhead projectile. We learned in the ammunition hearing last month that Copperhead continues to experience cost and reliability problems. The Army and Marine Corps have deleted all funding for Copperhead in their Fiscal year 1984 budget submission. What impact will this have on the requirement for MULE?

Answer. MULE can be used to accurately determine the location of targets or to designate targets for laser guided weapons. Laser guided bombs and laser Maverick would both require MULE as a designation. Additionally, the MULE Cost and Operational Effectiveness Analysis (COEA) indicated that the accuracy of target location achieved by MULE causes a reduction in the amount of conventional munitions required to achieve a specified effect on a target.

INDUSTRIAL BASE ENHANCEMENTS

Question. One of the purposes of multiyear contracting is to enhance the industrial base. What specific industrial base improvements will result from your multiyear contract proposal that would not occur under an annual contract approach?

Answer. The foremost industrial base improvement resulting from the multiyear contract will be the stability of commitment permitting economic order quantity buying.

STANDARD MISSILE

Question. Admiral Miller, the detailed backup material for the Standard Missile was not included in the Navy's April 22nd letter to the Committee. I would like to ask a few questions about this program, however, I would also like you to submit your supporting justification data for the record. What is the total value of the multiyear program?

Answer. $666M

Question. How many missiles will you buy?

Answer. 3450.

Question. How many years does the period of the contract entail?

Answer. 5.

Question. What is the total savings you expect to yield in a multiyear contract when compared to an annual buy?

Answer. $62.7M.

Question. What percentage of the savings is escalation avoidance?

Answer. 23.8 percent.

Question. Are there any other sources of savings, and if so, how do these amounts relate to the total estimated savings?

Answer.

	Millions
Vendor Procurement (EOQ, reduced administrative costs, reduced startup, etc.)	$42.2
Manufacturing economies: Continuous production, stable/qualified work force and improved tooling/test equip utilization	5.6
Escalation	14.9
Total savings	62.7

MK–46 TORPEDO

Question. Admiral Miller, on page 3 of your statement you state that the planned program for the MK 46 Torpedo is to procure 3250. Yet in Secretary Lehman's letter of April 22nd he states the plan is to procure 3140 a difference of 110 torpedoes. How many MK 46 Torpedoes are you planning to buy under the multiyear proposal?

Answer. My original statement relative to procurement of 3250 torpedoes is in error. We are planning to buy 3140 MK 46 torpedoes under the multiyear proposal.

Question. In Secretary Lehman's letter of April 22nd he states the total cost of 3140 torpedoes procured under the multiyear approach is $684.4 million, and this would yield a savings of $38.1 million, or 5.5 percent when compared to an annual approach. What portion of that $38 million is escalation avoidance?

Answer. Escalation avoidance accounts for $15.25 million or 40 percent of the $38.1 million savings.

Question. This $38.1 million savings is lower than your original estimate of $40.4 million. What caused this decrease?

Answer. The $38.1 million savings is based on a procurement quantity of 3140 while the $40.4 million was based on the procurement of 3250 torpedoes which was an internal Department of Defense proposal at one point in time.

Question. What percentage of the $38 million savings is related to vendors procuring in large quantities? Has this been verified by the contractor?

Answer. Honeywell, Inc., the sole source contractor for the Torpedo MK 46, has verified that of the total savings to be realized through the multiyear contract, $15.25 million or 40 percent of total savings will directly result from vendors being able to procure in economic quantities.

Question. Your budget requests $105.7 million for the MK 46 buy, while your April 22nd letter calls for $97.8 million for the same buy. Can you explain the apparent discrepancy?

Answer. The $97.8 million is the contractor's cost only. The $105.7 million includes all support costs related to the torpedo procurement such as in-house engineering support and acceptance test and evaluation. Also included is the funding for containers, otto fuel and loading of the torpedo warheads.

Question. You plan on procuring over 3100 torpedoes. Do you plan to do this on a competitive basis and if not, why are you eliminating another possible cost saving alternative?

Answer. The present contractor, Honeywell, Inc. has been building MK 46 Mod 5 Torpedoes and Mod 5 Kits for the past four years. A second source would have to qualify their torpedo production process and torpedoes to existing specifications. Considering the safety, quality, and performance requirements placed on the weapon system there would be a significant delay in achieving the qualification tasks. It is estimated, conservatively, that a production delay of at least 18 months would accrue at an additional cost of more than $100M beyond current procurement cost projections. The additional cost would result from loss of savings to be realized from the Honeywell multiyear proposal, the cost to qualify a new contractor, and the increased costs to Honeywell associated with the resultant reduction in monthly production rates. Experience gained from the Torpedo MK 46 production program shows a very marked relationship between monthly production rate and unit cost. A 50-percent decrease in production rate would result in a 20-percent increase in unit cost.

DEFENSE METEOROLOGICAL SUPPORT PROGRAM (DMSP)

Question. The DMSP program is an operational satellite system which provides a variety of data on cloud cover and other weather related information for the DOD. The Air Force intends to begin a multi-year funding program for DMSP in fiscal year 1984.

Over the years, various improvements have been made to DMSP satellites as technology evolved.

To what, if any, extent are the DMSP satellites you intend to procure with these funds different from the presently operational satellites?

If any of the components of these satellites will be different, do you consider the new components to be "low risk" upgrades?

Answer. The satellites that DMSP intends to procure under the multi-year procurement will be essentially the same as the Block 5D–2 satellites now being procured. Some internal (electrical) modifications are being planned for four of the spacecraft subassemblies ("boxes"), the primary sensor sunshade will be redesigned, and the specification for the solar cells will be modified.

The electrical modifications are needed based on the lessons learned from earlier Block 5D and TIROS–N spacecraft.

The sunshade redesign is taking advantage of the larger heat-shield volume and weight-to-orbit capability of the Atlas launch booster to make a more reliable, simpler sunshade.

The change to the solar cell specification is intended to take advantage of the performance of the solar cells, as currently delivered by the vendor, making this performance a specification require-

ment so that in the future the performance will be maintained at this level.

All of these changes will be operationally flown on Block 5D–2 or TIROS–N vehicles, or fully qualified, prior to the start of integration for the first satellite in the multi-year procurement.

All of these changes are considered low risk due to the nature of the change, the lead time available, and the availability of the present design as a backup if difficulties in design, production, or qualification should occur.

Question. Your prepared statement mentions that the total cost of the four DMSP satellites is $245.6 million, and this buy is to be funded in increments of $149 million in fiscal year 1983 and $96.6 million in fiscal year 1985.

Isn't this incremental funding?

Why didn't you simply fully fund all four satellites in the fiscal year 1983 budget request?

Answer. Our proposed multiyear procurement is truly a fully funded procurement.

In fiscal year 1983, we are fully funding the expanded advance buy of 4 sets of parts and subassemblies in order to obtain economic order quantities with a cost avoidance of $49.3M. Additionally in fiscal year 1983, we are fully funding the assembly, integration, test and launch of the first two satellites. In fiscal year 1985, we are fully funding the assembly, integration, test and launch of the last two satellites.

We did not fully fund all four satellites on fiscal year 1983 because the DMSP satellites are integrated and tested in pairs. Consequently, there was no advantage to fully funding all four satellites in fiscal year 1983.

Question. The total request for DMSP procurement in fiscal year 1983 is $174.2 million. How do you reconcile this figure with the $149 million figure in your statement?

Answer. The $149 million is for the multiyear procurement of two DMSP Block 5D–2 spacecraft and imaging sensors ($118.3 million) and for advance procurement to obtain economic order quantities ($30.7 million) for two additional spacecraft and imaging sensors.

The remainder of the funds ($18.9 million of 3020 and $6.3 million of 3080) will be used to procure space booster modifications, solid rocket motors, sensors, to correct deficiencies discovered on orbit, to procure Aerospace Corporation technical support and to provide ground system hardware and spares.

Question. Your statement says "The Air Force proposes to initiate a multiyear procurement of 4 DMSP spacecraft and primary sensors in fiscal year 1983". Previous testimony to the Committee this year stated: "Two units are fully funded and an expanded advance buy of parts and some subassemblies for two more units are also funded".

Would you please explain the apparent discrepancy between these statements. Are all 4 DMSP satellites proposed for multiyear procurement, or are 2 fully funded in fiscal year 1983 and 2 proposed for multiyear procurement?

Answer. There is no discrepancy between these two statements. The DMSP multiyear procurement will buy parts and subassemb-

lies for four block 5D–2 spacecraft and imaging sensors in 1983. The assembly, integration, and test of two of the satellites and imaging sensors will also be funded in fiscal year 1983. The assembly, integration, and test of the second two satellites and imaging sensors will be funded in fiscal year 1985.

This is as described in the statement, in the multiyear proposal, and in previous testimony as "a multiyear procurement of two DMSP Block 5D–2 spacecraft and imaging sensors and for advance procurement (to obtain economic order quantities with a cost avoidance of $49.3 million) for two additional spacecraft and imaging sensors."

Question. If the $149 million being requested in fiscal year 1983 for DMSP multiyear procurement is devoted to fully funding 2 satellites to provide advance procurement items for the 2 additional satellites to be acquired in fiscal year 1985: How much is for the two fully funded satellites: How much is for the advance procurement items for 2 additional satellites?

Answer. The full funding for two DMSP Block 5D–2 spacecraft and imaging sensors is $118.3 million. The advance procurement, to obtain economic order quantities, for the second two spacecraft and imaging sensors is $30.7 million.

Question. Please explain how you calculate the projected $49.3 million cost saving mentioned in your statement.

Answer. The cost savings of $49.3 million were calculated by determining the outlays, in "then year" dollars, required to procure one spacecraft and one imaging sensor in 1983, 1984, 1985, and 1986 and then subtracting the outlays, also in "then year" dollars, required for the multiyear procurement.

Costs ("then year" fiscal years 1983–1992):	*Millions*
Annual buy	$294.9
Multiyear procurement	245.6
Savings ("then year")	49.3

NOTE. The $49.3M savings is composed of vendor procurement efficiencies ($39.4M) and manufacturing efficiencies ($9.9M).

Question. The fiscal year 1983 DMSP budget includes $27.7 million for RDT&E, and the fiscal years 1984–1987 projected DMSP program includes an additional $146.8 million for RDT&E.

How much RDT&E remains to be done on the 4 satellites you intend to procure with these funds?

If RDT&E remains to be done on the four, does that mean you are deviating from your criteria as to what characteristics a program multiyear procurement should have?

Answer. Some RDT&E work does need to be completed for the satellites to be procured with the multiyear procurement. This work is intended to make design improvements based on the lessons learned in earlier Block 5D and TIROS–N satellites. This RDT&E work started in fiscal year 1982 and will be completed in fiscal year 1983.

All of these improved systems will be operationally flown or fully tested and qualified prior to the integration of the first satellite in the multiyear buy. All of these modifications are considered minor and very low risk and do not deviate from the multiyear procure-

BEST DOCUMENT AVAILABLE

ment assessment criteria of configuration stability, cost confidence, or contractor capability.

The majority of the RDT&E funds in fiscal years 1984–1987 will be be used to transition the DMSP to the Space Shuttle and for the design, construction, and qualification of a Shuttle qualified DMSP spacecraft and imaging sensor.

Question. In fiscal year 1982, $47.4 million was appropriated for DMSP RDT&E.

How much of this funding has been obligated to date?

For what specific purpose has it been used?

Answer. $47.4 million in fiscal year 1982 was appropriated for DMSP RDT&E. $2.2 million has been reprogramed away from DMSP. $13.1 million has been obligated to date. $30.5 million is committed but not yet obligated. Program planning calls for $19.5 million to be obligated in August and the remainder in September.

During fiscal year 1982, RDT&E funds were committed to the engineering and design effort for integrating an R&D sensor on the satellite, beginning the design of a Space Shuttle qualified (imaging) sensor, for upgrading the ground command and control system to support Block 5D–2 operations, for the design of an encryption system for the satellite command and control system, and for integration and studies on a number of small mission sensors.

GLOBAL POSITIONING SYSTEM

Question. The Committee covered the Global Positioning System very extensively at a recent reprogramming hearing. The Committee denied the reprogramming, based on the fact that the DOD was requesting "incremental funding" for the program. Subsequent to the hearing, the DOD submitted a "full funding" procurement profile and the Committee agreed to provide the reprogramming funds for GPS.

What is the status of the funds provided in that reprogramming? Are you under contract? If so, provide details of the contract for the record.

Answer. In order to maintain schedule, the Air Force intends to award a long lead contract for the first increment of the Block Buy before the end of August. We will then perform a thorough analysis of the contractor's full proposal to ensure that the Government realizes the proposed savings for the Block Buy. The Congressionally directed "fully funded" Block Buy contract will be awarded in early 1983.

Question. According to your statement, the multi-year contract is for the space component of the GPS program.

What assurances do you have that adequate numbers of ground, ship and aircraft terminals will be deployed as the space component of GPS becomes operable?

Answer. We expect to select a production contractor for GPS user equipment in mid-1984. The services have programmed over $800 million during the FYDP to buy and install the equipment in a variety of land, sea and air platforms. The first installed GPS user equipment will be operational in late 1986/early 1987. This timing coincides with the availability of GPS worldwide two dimen-

sional (2D) capability. Worldwide 3D capability is in late 1988 when the 18 satellite constellation is on orbit.

Question. Are any of the GPS terminal programs candidates for future multi-year procurement?

Answer. The services are currently developing the acquisition strategy for procurement of GPS user equipment. One of the candidate strategies includes multi-year procurement. However, a great deal more work needs to be done before DOD reaches a decision on the strategy.

Question. How much RDT&E remains on the ground terminals for GPS? Please comment and provide details for the record.

Answer. GPS user equipment is currently in a Full Scale Development "flyoff" phase. Magnavox and Rockwell-Collins are each building families of user equipment under Fixed Price Incentive Firm Target contracts for about $80 million each. Both contractors are currently performing factory tests on this equipment in preparation for field testing on development test platforms (C-141 aircraft, M-35 truck). Development tests will begin before the end of 1982.

Combined development/operational testing is scheduled to begin in mid-calendar year 1983. The Air Force Test and Evaluation Center (AFTEC) will oversee operational testing with participation from all other service operational test agencies. The multi-service test platforms are the F-16, B-52, A-6, nuclear submarine, aircraft carrier, UH-60 helicopter, M-60 tank, and a manpack. The services expect to select a production contractor in mid-1984.

Question. General, you state that economic order purchasing and manufacturing will yield over $200 million in savings.

Have these projected savings been discounted for the accelerated expenditure of funds necessary to obtain economic order benefits?

Answer. On 29 July, we provided multiyear exhibits to Congress. These exhibits identified $212 million of savings and cost avoidance for the GPS Block Buy. After discounting for the effects of inflation, $92 million of savings results from vendor procurement, manufacturing, design/engineering, tool design, and overhead.

Question. Your statement mentions that a previous problem was premature failing of the clocks on the satellite? What assurances can you give the Committee that the clocks will last the full life of the satellites?

Answer. Early in the R&D phase, GPS clocks failed prematurely causing us to complete an aggressive clock improvement program. Subsequently, we have demonstrated more than 11 satellite years of uninterrupted performance without any clock failures.

In addition to the improved clock, each GPS satellite is designed with four redundant clocks. Even if one fails, three will remain.

Our on-orbit experience and clock redundancy confirm that the clocks will be available for the full life of the satellites.

[CLERK'S NOTE: End of questions submitted by Mr. Addabbo.]

Mr. ADDABBO. There will be no hearing this afternoon. The committee will stand in recess until 9:30 tomorrow morning.

Dr. BORSTING. Let me just make one quick comment in finishing. We agree with you, Mr. Chairman. We do want to be very careful. That is why we have been talking to you and continue to worry

96-942 O - 82 - 44

about this. Let me assure you that my office will continue to worry about multiyear programs on a very rigorous basis.

Also, you are saying the contractors want to lock in multiyear. We are not finding that in all situations. We are finding that with hard multiyear negotiations sometimes the contractor does not want a multiyear. Under annual procurements the contractor can negotiate each year, and if he gets in a more noncompetitive position it might be better for him to do that than to be locked into a hard negotiated multiyear, so there are pros and cons on it.

Mr. ADDABBO. Which brings us to the other side of the coin, that we have to continue to look to second sourcing whenever possible.

Dr. BORSTING. That is correct, and of course the Navy example of 70 candidates really shows that we have done a lot of screening before it has come to you, and it shows that the process in the building is looking carefully at the multiyear candidate.

Mr. ADDABBO. Thank you very much. We appreciate it.

Dr. BORSTING. Thank you, Mr. Chairman.

Mr. ADDABBO. We are adjourned until 9:30 tomorrow morning.

THURSDAY, AUGUST 5, 1982.

FISCAL YEAR 1982 REPROGRAMINGS

PUBLIC LAW 97-60 ENTITLEMENTS

REPROGRAMINGS 82-45PA, 46PA, 47PA, AND 48PA

WITNESSES

CAPT. R.C. JONES, USN, COMPENSATION DIRECTORATE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (MANPOWER, RESERVE AFFAIRS AND LOGISTICS)

BRIG. GEN. HAROLD M. DAVIS, JR., USA, DIRECTOR OF ARMY BUDGET, OFFICE OF THE COMPTROLLER OF THE ARMY

REAR ADM. RICHARD A. MILLER, USN, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF THE NAVY COMPTROLLER

COL. CHARLES D. METCALF, DEPUTY DIRECTOR OF BUDGET (OPERATIONS), COMPTROLLER OF THE AIR FORCE

COL. KENNETH T. HARMON, PERSONNEL BUDGET DIVISION, DIRECTOR OF PERSONNEL PROGRAMS, DEPUTY CHIEF OF STAFF, MANPOWER AND PERSONNEL

INTRODUCTION

Mr. ADDABBO. The committee will come to order.

This morning the committee will hear various reprogramings of the Army, Air Force and the Navy.

The first reprograming is 82-45PA, Operation and Maintenance, Army, 82-46PA, Operation, and Maintenance, Marine Corps, 82-47PA, Operation and Maintenance, Navy, and 82-48PA, Operation and Maintenance, Air Force. (Total Amount: $4,487,000).

These reprogramings deal with travel authorized by the Uniformed Services Pay Act of 1981. They total $4,487,000 and involve each of the services. Captain Robert Jones, USN, from the Compensation Directorate, OASD (MRA&L) will present the Department's request, and he will be supported by witnesses from each of the Services.

We will insert in the record at this point the reprograming document and the statements of the supporting witnesses.

[The material follows:]

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Page 1 of 1 Pages

REPROGRAMING ACTION

OPERATION AND MAINTENANCE, ARMY 1982

82-45 PA

FY 82-23 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM DATA REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY DOD/OSD		REPROGRAMING ACTION		REVISED PROGRAM	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						

This reprograming action is submitted for prior approval since this action constitutes a change from purposes originally appropriated by Congress and complies with the House Appropriations Committee Report Number 97-333. This action will provide funding to implement the Uniformed Services Pay Act of 1981 (Public Law 97-60) which included increases for which no funds were included in the FY 1982 Budget Request. The sources of funds in the O&M, Army appropriation are from General Purpose Forces and Intelligence and Communications. This action meets all the administrative and legal requirements of Congress. This action is not reflected in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASES:

OPERATION AND MAINTENANCE, ARMY, FY 1982

GENERAL PURPOSE FORCES

	5,333,834	5,293,147	-0-	5,293,147
(TRAVEL FOR CONSECUTIVE OVERSEAS TOURS)			(+94)	

EXPLANATION: Travel for Consecutive Overseas Tours was implemented 1 March 1982 with a projected cost for the remainder of FY 1982 of $94,000.

(FUNDED EMERGENCY LEAVE)			(+1,100)	

EXPLANATION: The projected implementation date for Funded Emergency Leave is 1 July 1982. It is estimated that the projected cost for the remainder of FY 1982 is $1,100,000.

TOTAL GENERAL PURPOSE FORCES INCREASES			(+1,194)	

INTELLIGENCE AND COMMUNICATIONS

	835,806	840,612	-0-	840,612
(ENVIRONMENTAL AND MORALE LEAVE)			(+100)	

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REPROGRAMING ACTION

APPROPRIATION/BUDGET ACTIVITY							SUB HEAD NUMBER
OPERATION AND MAINTENANCE, ARMY 1982							82-45 PA
COMPONENT SERIAL NUMBER	(Amounts in Thousands of Dollars)						
FY 82-23 PA							
LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY DOD/OSD		REPROGRAMING ACTION		REVISED PROGRAM
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY / AMOUNT
a	b	c	d	e	f	g	h / i
		PRIOR APPROVAL ACTION					

EXPLANATION: The projected implementation date for Environmental and Morale Leave is 1 July 1982. It is estimated that the projected cost for the remainder of FY 1982 is $100,000.

TOTAL INTELLIGENCE AND COMMUNICATIONS INCREASE (+100)

TOTAL REPROGRAMING INCREASES (+1,294)

REPROGRAMING DECREASES: FY 1982

OPERATION AND MAINTENANCE, ARMY, FY 1982

GENERAL PURPOSE FORCES

	5,333,83[illegible]	5,293,14[illegible]	-0-	5,293,147
(SUPPLIES AND EQUIPMENT)			(-1,194)	

EXPLANATION: Requisitioning of discretionary type items of supplies and equipment will be deferred in FY 1983. Examples of these items are administrative supplies and equipment such as bulletin boards, file cabinets, storage cabinets and furniture cleaning supplies.

TOTAL GENERAL PURPOSE FORCES DECREASE (-1,194)

INTELLIGENCE AND COMMUNICATIONS

	835,806	840,612	-0-	840,612
(COMMUNICATION SLIPPAGES)			(-100)	

EXPLANATION: Due to slippages in agreements with the Government of Korea, all of the communication systems upgrade that was originally planned in FY 1982 will not be accomplished. The deferred programs will be continued in FY 1983.

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Page 3 of 3 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE	DOD SERIAL NUMBER
OPERATION AND MAINTENANCE, ARMY 1982	82-45 PA

COMPONENT SERIAL NUMBER: FY 82-23 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CUMULATIVE APPROVED ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
TOTAL INTELLIGENCE AND COMMUNICATIONS DECREASE						(-100)		
TOTAL REPROGRAMING DECREASES						(-1,294)		
NET CHANGE IN PROGRAM, OPERATION AND MAINTENANCE, ARMY FY 1982						-0-		

APPROVED (Signature and Date)

Frank C. Carlucci
Deputy Secretary of Defense

DD, FORM 1415 - 1

UNCLASSIFIED

1 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jun 71, which are obsolete.

BEST DOCUMENT AVAILABLE

STATEMENT BY REAR ADM. RICHARD A MILLER, USN

This "prior approval" action requests authority to reprogram $1,613 thousand within the Operation and Maintenance, Navy appropriation to finance certain military personnel entitlement authorized by the Uniform Service Pay Act of 1981 (Public Law 97-60) but excluded from the fiscal year 1982 budget request, viz:

a. Emergency Leave Travel.—$585,000.

Payment of transportation costs for a member and dependents incident to an emergency, when the member is stationed overseas (with dependents) and must return to the continental U.S. (CONUS). Public Law 97-60 also authorized payment of transportation costs for a member, who is on temporary duty at an overseas location, to return to his home station or location of the emergency in the event of a serious illness, injury or death of a dependent.

b. Environmental and Morale Leave Travel.—$528,000.

Payment of transportation costs associated for members and dependents stationed at designated isolated, austere or environmentally depressed locations. Designation of the qualified locations will be aligned to those currently use by the Department of State in most cases, and accomplished by the Joint Chiefs of Staff and Services to assure uniformity among all Services.

c. Non-temporary Storage Allowance.—$500,000.

Non-temporary storage costs of household goods for military personnel ordered on temporary duty or deployed for periods in excess of 90 days.

The funding support of these entitlements, representing one quarter of the annualized requirement, can be made available from savings associated with the devaluation of the Philippine peso.

This request is for higher priority items than those for which the funds were originally appropriated, meets all administrative and legal requirements of the Congress, and has not been denied by the Congress. It is submitted for prior approval at the direction of the House Appropriations Committee pursuant to the fiscal year 1981 Uniformed Services Pay Act. This action is not contained in the fiscal year 1982 column of the fiscal year 1983 President's Budget.

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Page 1 of 3 Pages

REPROGRAMING ACTION

Operation and Maintenance, Navy, FY 1982

DOD SERIAL NUMBER: 82-47 PA

COMPONENT SERIAL NUMBER: FY 82-13 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This action requests authority to reprogram $1,613 thousand within the Operation and Maintenance, Navy appropriation to finance certain military personnel entitlements authorized by the Uniformed Service Pay Act of 1981 (Public Law 97-60) but excluded from the FY 1982 budget request. This request is for higher priority items than those for which the funds were originally appropriated, meets all administrative and legal requirements of the Congress, and has not been denied by the Congress. It is submitted for prior approval at the direction of the House Appropriations Committee pursuant to the FY 1981 Uniformed Services Pay Act. This action is not contained in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASES

FY 1982 Program

Budget Activity 2: General Purpose Forces	- 9,833,428	- 9,794,396	- -0-	- 9,794,396
1. Emergency Leave Travel			(446)	
2. Environmental and Morale Leave Travel			(410)	
3. Non-temporary Storage Allowance			(500)	
Budget Activity 3: Intelligence and Communications	- 767,902	- 769,305	- -0-	- 769,305
1. Emergency Leave Travel			(59)	
2. Environmental and Morale Leave Travel			(74)	
Budget Activity 8: Training, Medical, and Other General Personnel Activities	- 1,629,464	- 1,679,474	- -0-	- 1,679,474
1. Emergency Leave Travel			(80)	
2. Environmental and Morale Leave Travel			(44)	

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Page 2 of 3 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE	DOD SERIAL NUMBER
Operation and Maintenance, Navy, FY 1982	82-47 PA
COMPONENT SERIAL NUMBER: FY 82-13 PA	(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

Emergency Leave Travel (+585)

Explanation: P.L. 97-60 authorized payment of transportation costs for a member and dependents incident to an emergency, when the member is stationed overseas (with dependents) and must return to the continental U.S. (CONUS). Prior to the change, only the member was provided space required military transportation while dependents were authorized to travel on Military Airlift Command (MAC) aircraft on a space available basis. Frequently space is not available on MAC aircraft so that either dependents do not return to the CONUS or the member must pay for commercial airline tickets. The provision also authorizes commercial aircraft for those locations not serviced by MAC or when MAC flights are not reasonably available. P.L. 97-60 also authorized payment of transportation costs for a member, who is on temporary duty at an overseas location, to return to his home station or location of the emergency in the event of a serious illness, injury or death of a dependent. This amount represents one quarter of the fiscal year requirement.

Environmental and Morale Leave Travel (+528)

Explanation: P.L. 97-60 authorized payment of transportation costs associated for members and dependents stationed at designated isolated, austere or environmentally depressed locations. Designation of the qualified locations will be aligned to those currently used by the Department of State in most cases, and accomplished by the Joint Chiefs of Staff and Services to assure uniformity among all Services. This amount represents one quarter of the fiscal year requirement.

Non-temporary Storage Allowance (+500)

Explanation: P.L. 97-60 authorized non-temporary storage of household goods for military personnel ordered on temporary duty or deployed for periods in excess of 90 days. This amount represents one quarter of the fiscal year requirement.

TOTAL REPROGRAMING INCREASES (+1,613)

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Page 3 of 3 Pages

REPROGRAMING ACTION

Appropriation Account Title: Operation and Maintenance, Navy, FY 1982

DOD Serial Number: 82-47 PA

Supplement Serial Number: FY 82-13 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by SECDEF		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
REPROGRAMING DECREASES								
FY 1982 Program								
Budget Activity 2: General Purpose Forces		- 9,833,428		- 9,794,396		-0-		- 9,794,396
						(-1,356)		
Budget Activity 3: Intelligence and Communications		- 767,902		- 769,305		-0-		- 769,305
						(-133)		
Budget Activity 8: Training, Medical and Other General Personnel Activities		- 1,629,464		- 1,679,474		-0-		- 1,679,474
						(-124)		

Explanation: The funding support of these entitlements can be made available from savings associated with the devaluation of the Philippine peso.

TOTAL REPROGRAMING DECREASES (-1,613)

Approved (Signature and Date)

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1 JUL 73 1415 - 1

UNCLASSIFIED

1 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 75, which are obsolete.

BEST DOCUMENT AVAILABLE

STATEMENT OF REAR ADM. RICHARD A. MILLER

This reprograming action is required to finance the travel and transportation allowances authorized by the Uniformed Services Pay Act of 1981 (P.L. 97-60). Funding will be provided from within the Operation and Maintenance, Marine Corps appropriation. Limiting language in the fiscal year 1982 Conference Report requires submission of a reprograming or supplemental request prior to implementation of the new travel entitlements.

The new travel and transportation allowances provide for emergency leave travel for the member and dependents when the member is stationed overseas and must return to the continental U.S., and under circumstances where the member is on temporary duty at another location, to return to his home station or location of the emergency in the event of a serious illness, injury or death of a dependent. The Pay Act also authorized payment of transportation costs associated with environmental and morale leave for members and dependents stationed at designated isolated, austere or environmentally depressed locations. Further, temporary storage of household goods, beyond the previously approved 180 days, was authorized for use when the member's household goods cannot be withdrawn from storage because of circumstances beyond the control of the member. The cost of implementation of these travel entitlements of 1 July 1982 is $555,000.

The funding source for this reprograming request is provided by savings realized from reduced requirements for allowance item changes below that budgeted.

Denial of this action would further delay the fair reimbursement of travel and transportation cost to the military member when the member is assigned to duty at locations and under certain circumstances and situations requiring travel, that arise and that are beyond the control of the member.

This action was not reflected in the fiscal year 1982 column of the fiscal 1983 President's budget.

This reprograming action is submitted as a prior approval action to both the House and Senate Appropriations Committees as stipulated in the fiscal year 1982 Conference Report.

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Page 1 of 2 Pages

REPROGRAMING ACTION

Operation and Maintenance, Marine Corps, FY 1982

82-46 PA

FY 82-14 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM DATA REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This action requests authority to reprogram $555 thousand within the Operation and Maintenance, Marine Corps appropriation to finance certain military personnel entitlements authorized by the Uniformed Service Pay Act of 1981 (Public Law 97-60) but excluded from the FY 1982 budget request. This request is for higher priority items than those for which the funds were originally appropriated, meets all administrative and legal requirements of the Congress, and has not been denied by the Congress. It is submitted for prior approval at the direction of the House Appropriations Committee pursuant to the FY 1981 Uniformed Services Pay Act. This action is not contained in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASES

FY 1982 Program

Budget Activity 2: General Purpose Forces	-	736,263	-	736,263	-	-0-	-	736,263
1. Emergency Leave Travel						(+55)		

Explanation: P.L. 97-60 authorized payment of transportation costs for a member and dependents incident to an emergency, when the member is stationed overseas (with dependents) and must return to the continental U.S. (CONUS). Prior to the change, only the member was provided space required military transportation while dependents were authorized to travel on Military Airlift Command (MAC) aircraft on a space available basis. Frequently, space is not available on MAC aircraft so that either dependents do not return to the CONUS or the member must pay for commercial airline tickets. The provision also authorizes commercial aircraft for those locations not serviced by MAC or when MAC flights are not reasonably available. P.L. 97-60 also authorized payment of transportation costs for a member, who is on temporary duty at another location, to return to his home station or location of the emergency in the event of a serious illness, injury or death of a dependent. This amount represents one quarter of the fiscal year requirement.

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Page 2 of 2 Pages

REPROGRAMING ACTION

Operation and Maintenance, Marine Corps, FY 1982

DOD SERIAL NUMBER: 82-46 PA

APPROPRIATION SYMBOL: FY 82-14 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

2. Environmental and Morale Leave (EML) (+50)

Explanation: P.L. 97-60 authorized payment of transportation costs associated with EML for members and dependents stationed at designated isolated, austere or environmentally depressed locations. Designation of the qualified locations will be aligned to those currently used by the Department of State in most cases, and accomplished by the Joint Chiefs of Staff and Services to assure uniformity among all Services. This amount represents one quarter of the fiscal year requirement.

3. Additional Storage Allowances (+450)

Explanation: P.L. 97-60 authorized additional temporary storage of household goods (beyond the previous 180 days authorized) when they cannot be withdrawn from storage because of conditions beyond the control of a member (ordered on temporary duty or deployed for periods of 90 days or more shortly after arrival at new station). This amount represents one quarter of the fiscal year requirement.

TOTAL REPROGRAMING INCREASES (+555)

REPROGRAMING DECREASE

Budget Activity 2: General Purpose Forces - 736,263 - 736,263 - -0- - 736,263

1. Allowance Item Changes (-555)

Explanation: The discretionary increases authorized by the Uniformed Services Pay Act of 1981 (Public Law 97-60) are being accommodated from savings realized from reduced requirements for allowance item changes below that budgeted.

TOTAL REPROGRAMING DECREASE (-555)

APPROVED (Signature and Date)

Frank C. Carlucci
Deputy Secretary of Defense

DD FORM 1415-1

1 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 73, which are obsolete.

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STATEMENT BY COL. D. METCALF, USAF

Mr. Chairman and members of the committee: I appreciate the opportunity to be here today to discuss our proposal to reprogram $1,025,000 to fund requirements that were authorized by the Uniformed Services Pay Act of 1981 (Public Law 97-60) but were not included in the fiscal year 1982 Budget.

The first item in our request is $875 thousand for emergency leave travel for a member and dependents when the member is stationed overseas with dependents and must return to the continental United States due to an emergency. Prior to the Uniformed Services Pay Act of 1981, only the Service member was provided space on military transportation while dependents were on a "space available" basis.

Our request also includes $125 thousand for transportation costs for environmental and morale leave (EML) for Service members and dependents stationed at isolated, austere or environmentally depressed locations. Designation of the locations will be aligned to those currently used by the Department of State in most cases, and accomplished by the Joint Chiefs of Staff and Service Secretaries to assure uniformity among all Services.

The third item requested is $25 thousand for additional travel and storage allowances. This allows for Service members on leave to return from overseas to the continental United States between consecutive overseas tours in locations where dependents are not authorized. Also requested is approval for additional temporary storage of household goods, beyond the previous 180 days authorized, when they cannot be withdrawn from storage because of conditions beyond the control of a Service member (such as prolonged deployments).

The source of funding is from our Permanent Change of Station (PCS) account, Military Personnel, Air Force Appropriation. This decrease in PCS funding is attributable to a decrease in separation moves, which are lower than originally anticipated because of improved Air Force retention.

This concludes my statement, Mr. Chairman. I will be happy to respond to any questions you may have.

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Page 1 of 3 Pages

REPROGRAMING ACTION

Operation and Maintenance, Air Force, FY 1982 (Includes Transfers) — DOD SERIAL NUMBER: 82-48 PA

FY 82-30 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DSC DAP		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming action is submitted for prior approval since it involves transfer of funds between appropriations, authorized by Section 733 of the FY 1982 Defense Appropriation Act, and also involves programs of special interest to the Committees. The purpose is to fund requirements that were authorized by the Uniformed Services Pay Act of 1981 (Public Law 97-60) but were not included in the FY 1982 budget. The source of the reprograming is the Military Personnel, Air Force Appropriation. This action would provide funds for higher priority items than those for which the funds were originally appropriated, and in no case for items which have been denied by Congress. This reprograming action meets all the administrative and legal requirements of Congress. It is not included in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASES

Operation and Maintenance, Air Force, FY 1982 Program

General Purpose Forces	3,630,790	3,625,389	+1,025	3,626,414
Emergency Leave Travel			(+ 875)	

Explanation: P.L. 97-60 authorized payment of transportation costs for a member and dependents incident to an emergency, when the member is stationed overseas (with dependents) and must return to the continental U.S. (CONUS). Prior to the change, only the member was provided space required military transportation while dependents were authorized to travel on Military Airlift Command (MAC) aircraft on a space available basis. Frequently space is not available on MAC aircraft so that either dependents do not return to the CONUS or the member must pay for commercial airline tickets. The provision also authorizes commercial aircraft for those locations not serviced by MAC or when MAC flights are not reasonably available. P.L. 97-60 also authorized payment of transportation costs for a member, who is on temporary duty at another location, to return to his home station or location of the emergency in the event of a serious illness, injury or death of a dependent. This amount represents one quarter of the fiscal year requirement.

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UNCLASSIFIED
Classification

REPROGRAMING ACTION

Operation and Maintenance, Air Force, FY 1982 (Includes Transfers) | DOD Serial Number: 82-48 PA

Component Serial Number: FY 82-30 PA | (Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by SEC DEF		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

Environmental and Morale Leave (EML) (+ 125)

Explanation: P.L. 97-60 authorized payment of transportation costs associated with EML for members and dependents stationed at designated isolated, austere or environmentally depressed locations. Designation of the qualified locations will be aligned to those currently used by the Department of State in most cases, and accomplished by the Joint Chiefs of Staff and Services to assure uniformity among all Services. This amount represents one quarter of the fiscal year requirement.

Additional Travel/Storage Allowances (+ 25)

Explanation: P.L. 97-60 authorized (1) travel allowances for members on leave to return from overseas to the CONUS between consecutive overseas tours in a location(s) where dependents are not authorized, and (2) additional temporary storage of household goods (beyond the previous 180 days authorized) when they cannot be withdrawn from storage because of conditions beyond the control of a member (ordered on temporary duty or deployed for periods of 90 days or more shortly after arrival at new station). This amount represents one quarter of the fiscal year requirement.

TOTAL PROGRAM INCREASES + 1,025

NET CHANGE IN PROGRAM + 1,025

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Page 3 of 3 Pages

REPROGRAMING ACTION

Operation and Maintenance, Air Force, FY 1982 (Includes Transfers) — 82-48 PA

FY 82-30 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DSD Memo		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
REPROGRAMING DECREASE								
Military Personnel, Air Force, FY 1982 Program								
Permanent Change of Station Travel	825,958		818,388		- 1,025		817,363	

Explanation: The decrease in PCS funding requirements is related to a decrease in separation moves. Separation moves are lower than originally anticipated which is attributable to better Air Force retention. Reinstatement of funds will not be required.

TOTAL PROGRAM DECREASE - 1,025

NET CHANGE IN PROGRAM - 1,025

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1415 - 1

UNCLASSIFIED 1 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1416-1, 1 Jan 73, which are obsolete.

96-942 O - 82 - 45

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STATEMENT BY CAPTAIN JONES

Captain JONES. Thank you, Mr. Chairman, distinguished members of the committee, I am Captain Bob Jones from the Compensation Directorate in the Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics.

It is a privilege to appear before you to present the views of the Department of Defense on four extremely important issues to our men and women in uniform. With the passage of the Uniformed Services Pay Act (Public Law 97-60) in October of 1981, we turned the corner in correcting military compensation inadequacies and restored pay to a level which will enable us to recruit and retain a quality military force.

Contained within this Act are the four discretionary items for which we are here today to seek reprogramming approval. I will discuss each item briefly.

FUNDED ENVIRONMENTAL AND MORALE LEAVE TRAVEL

The Act authorizes funded travel to military members (and command-sponsored dependents) who serve in isolated, austere, or environmentally depressed locations. The implementation program developed by the Joint Chiefs of Staff, paralleling that for Department of State personnel, has complete Department support.

The member's leave account will be charged and maximum use will be made of military airlift. Each military department has reprogrammed funds for the remainder of fiscal year 1982 for which they request your approval.

FUNDED EMERGENCY LEAVE TRAVEL

The Act further authorizes payment of transportation costs for members (and military command-sponsored dependents) incident to emergency leave travel from overseas locations. The problems encountered with emergency leave are time sensitive. Military aircraft will be used when available. This program is needed to provide for commercial transportation when military airlift is not available or accessible. Either way transportation is only provided to the nearest entry points in the continental United States.

Again, all Services have reprogrammed funds for the remainder of fiscal year 1982 and request your approval.

TEMPORARY STORAGE OF HOUSEHOLD GOODS (IN EXCESS OF 180 DAYS)

The Act also authorizes continued storage payments when storage is necessary beyond the 180-day temporary limit when the cause for this action is beyond the control of the member. The Indian Ocean operation is an example where members are required to depart on extended deployment shortly after reporting to a new permanent duty station and temporary storage authority expires during the time they are deployed. These out-of-pocket expenses must be eliminated. The Army has requested supplemental funds, but the other Services are here today to request approval of their reprograming actions.

FUNDED TRAVEL FOR CONSECUTIVE OVERSEAS TOURS

Lastly, we solicit your approval for an Army reprogramming request to fund the travel portion of leave for members assigned consecutive overseas duty. This program extension contained in the Pay Act provides funded travel for leave when a member is assigned an additional tour at the same location. This technical change also permits a member to delay taking this funded travel when, for operational necessity, the member is required to report immediately to his next overseas assignment.

In summary, your approval of the Services' reprogramming requests will pay significant dividends in improved morale, force composition and readiness.

It has been my privilege to present the views of the Department of Defense on these issues.

Mr. Chairman, this concludes my formal statement. I and the Services' representatives will be happy to answer any questions that the committee may wish to ask with regard to these four personnel items. Thank you.

TABLE SUMMARIZING REQUEST BY PROGRAM AND SERVICES

Mr. ADDABBO. This request involves four programs and involves each of the Services. Provide for the record a table which would summarize the request by program and service. Also the effective date assumed in this request is July 1. This is now August 5th. Provide for the record a table summarizing for each Service by program the required amounts, if an effective date of August or September 1 were approved.

Captain JONES. Yes, sir.

[The information follows:]

PAY ACT DISCRETIONARY ITEMS

[Dollars in thousands]

	Army	Navy	Marine Corps	Air Force	Total
July 1, 1982:					
Emergency leave travel	1,100	585	55	875	2,615
EML	100	528	50	125	803
L/V consecutive O/S tours	94				94
Addition storage		500	450	25	975
Total	1,294	1,613	555	1,025	4,487
August 1, 1982:					
Emergency leave travel	733	390	35	583	1,731
EML	66	352	35	84	537
L/V consecutive O/S tours	62				62
Addition storage		332	300	16	648
Total	861	1,074	370	683	2,978
September 1, 1982:					
Emergency leave travel	367	195	20	292	874
EML	33	176	15	42	266
L/V consecutive O/S tours	31				31
Addition storage		166	150	8	324
Total	431	537	185	342	1,495

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FUNDED ENVIRONMENT AND MORALE LEAVE TRAVEL

Mr. ADDABBO. In your statement you mention the Act authorized travel from isolated, austere or environmentally depressed locations. Give the committee at this time a few examples and then expand for the record.

Captain JONES. Yes, sir. The locations individuals will be traveling to were specifically designated areas based on an extensive survey and are patterned very closely after a similar program within the Department of State.

Mr. ADDABBO. I usually don't like the Department of State.

Captain JONES. Yes, sir.

Mr. EDWARDS. That was not a good example.

Captain JONES. These are areas that provide relief for the conditions of life that the member and his family are experiencing such as physical isolation, restraint of freedom of movement, threat of terrorist activities, personal habits or unusual climate.

The program will be monitored annually by the Department and JCS, and typical examples would be from Bangladesh to Greece, Tunisia to the Federal Republic of Germany or Cuba to the continental United States.

Mr. ADDABBO. The Federal Republic of Germany is an austere place?

Captain JONES. No, sir, from Tunisia to.

Mr. ADDABBO. Oh, to?

Captain JONES. Yes, sir, from Cuba to the continental United States, and we will be happy to provide a list.

Mr. ADDABBO. Expand on that for the record.

Captain JONES. Yes, sir.

[The information follows:]

LOCATION/DESTINATION ELIGIBILITY UNDER THE FUNDED ENVIRONMENTAL AND MORALE PROGRAM

Location	Destination
Europe/Africa	
Afghanistan	Greece
Algeria	Spain
Bahrain	Greece
Bulgaria	FRG
Cameroon	France
Chad	Spain
Congo	France
Cyprus	Italy
Czechoslovakia	FRG
Egypt	Greece
Ethiopia	Greece
Gabon	France
Ghana	Italy
Gilbraltar	England
Hungary	Greece
Israel	Italy
Ivory Coast	France
Jordan	Italy
Kuwait	Greece
Lebanon	Greece
Liberia	France
Madagascar	France
Malawi	Greece

Mali	France
Mauritania	France
Morocco	FRG
Niger	France
Nigeria	CONUS
Oman	Greece
Poland	FRG
Romania	Greece
Saudi Arabia	CONUS
Senegal	France
Somalia	CONUS
Sudan	Greece
Syria	Greece
Tanzania	Greece
Tunisia	FRG
Turkey	FRG
United Arab Emirates	CONUS
Upper Volta	France
USSR	FRG
Yemen	CONUS
Zaire	France
Zambia	Greece
Zimbabwe	England

Pacific Area

Alaska (Adak only)	CONUS
Bangladesh	Greece
Burma	Hong Kong
China	Malysia
Fiji	Australia
India	Greece
Indonesia	Hong Kong
Malaysia	Hong Kong
Nepal	Greece
Pakistan	Greece
Singapore	Japan
Sri Lanka	Greece
Thailand	Hong Kong

Latin America Area

Barbados	CONUS
Bolivia	Panama
Brazil	Panama
Chile	CONUS
Colombia	CONUS
Dominican Republic	CONUS
Ecuador	Curacao
El Salvador	CONUS
Guatemala	CONUS
Guyana	Mexico
Haiti	Mexico
Honduras	CONUS
Jamaica	CONUS
Mexico	CONUS
Nicaragua	Bahamas
Paraguay	Peru
Peru	CONUS
Surinam	Mexico
Venezuela	CONUS

Atlantic Area

Antigua	CONUS
Azores	England
Bermuda	CONUS
Canada (Argentia only)	Spain

Cuba	CONUS
Puerto Rico	Mexico

Mr. ADDABBO. Also for the record, approximately how many persons a year do you have reference to, and how does it break down between the military members and their dependents.

Captain JONES. Yes, sir.

[The information follows:]

Approximately 15,000 individuals will be eligible to participate in the program. This figure represents 3,750 military personnel and 11,250 dependents. The Department anticipates that this one to three ratio of military member to dependents will continue.

Mr. ADDABBO. Have you established any limits on the number of trips that may be taken over a period of time?

Captain JONES. Yes, sir. The Act is specific regarding the number of trips. Funded transportation will be limited to one round trip for each military member and his dependents during a continuous 24-month tour or two round trips for a continuous 3-year, 36-month tour, and we intend to follow that.

Mr. ADDABBO. In your answer to my previous question setting forth the travel to and from where these places of austereness are, we would hope that you would be constantly rechecking that list from time to time. What may have been an austere or problem area last year may not be this year.

Captain JONES. Yes, sir.

TEMPORARY STORAGE OF HOUSEHOLD GOODS

Mr. ADDABBO. We also find that the necessary fund for temporary storage of household goods is in excess of 180 days. The program will cost about $4 million a year. Has the Department been looking at ways to correct this so that we do not have to have a man put his stuff in storage for almost six months?

Captain JONES. Yes, we have, Mr. Chairman. There are actually two different situations where a service member may be forced to place his household goods in temporary storage in excess of 180 days. Both of these were included in the Pay Act, one coming out of the Military Personnel Account. That involves an individual who would be required to perform temporary duty immediately upon reporting to his next duty station.

The second—the one that this programing request is directed at—is the storage in connection with temporary assignment away from the member's permanent duty station to include unit or ship deployments. This reprogramming request would reduce the member's out-of-pocket expenses when he is forced to leave the permanent duty station on a temporary basis and place his household goods in storage.

The majority of cases in this particular situation involves single personnel on deployed ships or unit deployment such as the Marines to Okinawa. The report in the Pay Act stipulates that the minimum absence must be 90 days; so we are talking 90 days to in excess of 180, and it is not felt that this situation can be avoided by better administration as far as this particular case is concerned. We are talking about individuals in unit deployments or ship deployments.

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CONSECUTIVE OVERSEAS TOURS

Mr. ADDABBO. The authority to implement the programs authorized under the Uniformed Services Pay Act of 1981 for consecutive overseas tours was to have come from either supplemental or reprogramming requests. Looking at the record, we find this program was actually implemented on March 1, 1982. Under what authority was it implemented?

Captain JONES. We approved the Per Diem Committee recommendation on February 26, 1982, to implement this technical change to consecutive overseas travel. Since these changes were a technical extension of an existing program, it was not believed that implementation restrictions contained in the Pay Act conference report on new bonus and benefit authorization were applicable.

As I indicated in my statement, these technical changes permit members who are assigned consecutive overseas tours of duty at the same location or who, at the convenience of the government, report directly to the new duty station to receive this funded travel, the same benefit that is being afforded members who are reassigned to another overseas station right now.

These changes should result in a slight savings in the PCS account and encourage members to seek additional overseas tours, thereby improving our readiness overseas.

FUNDED EMERGENCY LEAVE TRAVEL

Mr. ADDABBO. Please describe the nature of the emergency under this program.

Captain JONES. The nature of the emergency under this program is the death, serious injury, or serious illness of a parent, spouse, child, or sibling of a military member or his dependent.

Mr. ADDABBO. What is the Government providing under this authority that it is not now doing?

[The information follows:]

Currently, military members stationed overseas are entitled to space required emergency leave travel on Military Airlift Command aircraft. Dependents are authorized only space available in the same circumstance. Unfortunately, space required or space available travel is impractical in areas where military controlled aircraft are neither available nor accessible. This forces the military family to often undertake a substantial, long-term financial burden to respond to an urgent, time-sensitive emergency. This program is designed to fill the void occurring when, and only when, military-controlled aircraft are not reasonably available. Commercial travel is paid only from the overseas international airport to the closest entry point in the United States.

SOURCE OF FUNDS

Mr. ADDABBO. In looking at the source of funds in the Army, we find that $1,194,000 which would result from deferring requisitioning of discretionary-type supply and equipment items. Will that deferment in any way affect readiness?

General DAVIS. Mr. Chairman, that deferment will not affect readiness in any way.

Mr. ADDABBO. The Marine Corps is being asked to give up $555,000 from "allowance item changes." Admiral, will that affect readiness? We have a definition which says, "Numerous minor allowance changes for expense-type items are promulgated through-

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out the year based upon recommendations from Fleet Marine Force commanders and item program managers."

Admiral MILLER. Yes, sir. This is a very large program. The allowance list for the various units is constantly being revised. We find that the revisions this year permitted us to get some savings in the equipment allowance list that we had originally budgeted against, but with no effect on readiness.

Mr. ADDABBO. For the record, give us an idea of what some of those items might be.

Admiral MILLER. Yes, sir.

[The information follows:]

A sample listing of the types of items included under the decrease for Allowance Item Changes identified in the Operation and Maintenance, Marine Corps reprogramming request 82-46PA follows:

Saw, chain, one-man portable; torch, outfit, cutting and welding; coat; cold weather; liner, cold weather, coat nylon; belt, individual equipment; canteen, water, plastic; carrier, intrenching tool; cover, helmet, camouflage; cover, water canteen, nylon; cup, water canteen.

First aid kit; frame, field pack; headband, ground troops; helmet, ground troops; intrenching tool combination; line tent, cotton, liner, parachutist helmet; mattress, insulated pneumatic; pack, field medium.

Pin, tent; pole, section, tent; poncho, wet weather; shelter half; sleeping bag, mountain; strap webbing, nylon, left w/quick release.

Mr. ADDABBO. The Air Force is reprogramming $1,025,000 from their military personnel account. Personnel accounts usually have a direct effect on personnel, on readiness. You relate this to the supplemental. Can the Air Force give up this $1,025,000 without affecting readiness?

Colonel METCALF. Yes, we can, Mr. Chairman. As a result of improved retention the estimates that were previously prepared for separation travel have proven to be high, and we therefore may absorb this requirement within the appropriation.

Mr. ADDABBO. Thank you very much.

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THURSDAY, AUGUST 5, 1982.

PROCUREMENT OF ARMORED SEDANS

WITNESSES

COL. J. PAUL GONCZ, CHIEF, SUPPORT SYSTEMS DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION

BRIG. GEN. HAROLD M. DAVIS, JR., USA, DIRECTOR OF ARMY BUDGET, OFFICE OF THE COMPTROLLER OF THE ARMY

REAR ADM. RICHARD A. MILLER, USN, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF THE NAVY COMPTROLLER

COL. RONALD D. HANNAN, USAF, CHIEF, OFFICE OF ANTITERRORISM, INSPECTOR GENERAL OF THE AIR FORCE

LT. COL. JONES D. CORBETT, CHIEF, VEHICLE EQUIPMENT PROGRAM, DIRECTORATE OF LOGISTICS, PLANS, AND PROGRAMS, DEPUTY CHIEF OF STAFF FOR LOGISTICS AND ENGINEERING

INTRODUCTION

Mr. ADDABBO. We now turn to the question of procurement of armored sedans.

On July 19, the Committee received a letter from Mr. R. H. Conn, Deputy Under Secretary of the Navy for Financial Management notifying the committee of the Navy's intention to establish a new P-1 procurement line for armored sedans. I will place a copy of that letter in the record at this point.

[The letter follows:]

DEPARTMENT OF THE NAVY
OFFICE OF THE COMPTROLLER
WASHINGTON, D.C. 20350

1.7a

IN REPLY REFER TO

19 JUL 1982

The Honorable Joseph P. Addabbo
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives
Washington, DC 20515

Dear Mr. Addabbo:

The purpose of this letter is to provide advance notification regarding a proposed Fiscal Year 1982 reprograming action in the Other Procurement, Navy (OPN) appropriation as required in the Fiscal Year 1979 Defense Appropriations Conference Report (House Report No. 95-1764 of October 11, 1978). This action will result in the establishment of a new P-1 procurement line item which can be accommodated within the Navy's reprograming threshold.

Reprograming of $625,000 is required in Budget Activity 5, Civil Engineering Support Equipment, for procurement of eight armored sedans for use by the Naval Investigative Service to protect high ranking Department of the Navy officials, guests, and other dignitaries from terrorist and other criminal acts of violence. The contract for these vehicles will be awarded on a competitive fixed price basis. All of the vehicles will be managed in a central pool by the Naval Investigative Service, and some will be pre-positioned at various locations worldwide as circumstances dictate.

The funding source for the $625,000 reprograming increase is the AN/SLQ-17 P-1 line item in Budget Activity 2, Communications and Electronics Equipment. These funds are available because the actual contract price for the Fiscal Year 1982 AN/SLQ-17 procurement was slightly lower than the original budget estimate.

A similar letter has been provided to the Chairman, Defense Subcommittee, Senate Committee on Appropriations.

Sincerely,

R. H. Conn
Deputy Under Secretary of the
Navy (Financial Management)

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Mr. ADDABBO. Last year, the Army requested special language in the appropriation bill in order to allow the procurement of armored sedans. The committee limited this procurement to not more than 14 sedans at a unit cost no greater than $100,000.

After asking the Air Force about its intentions with respect to armored sedans, we found that they have been buying them since fiscal year 1981 with no notification, and no special appropriation language.

Because this appears to be another example of the services each going their own way with little apparent coordination, and because this program has the potential for getting out of control, I have asked each of the services to send representatives today so that we may discuss the matter. From the Army we have Colonel Paul Goncz; from the Navy we have Rear Admiral Richard Miller; and from the Air Force we have Colonel Ronald Hannan.

Admiral Miller and Colonel Hannan, on what legal grounds do the Navy and Air Force conclude that they can procure such vehicles without special appropriation language?

Admiral MILLER. Mr. Chairman, the Navy has provided what we believe is the proper notification to the committees in accordance with the conference report requirements for new start reprogrammings. This is House Report 95-1764 of October 1979, which indicates that for new start reprogrammings below $2 million, letter notification is the proper form.

Mr. ADDABBO. Colonel?

Colonel HANNAN. I would like to let Colonel Corbett answer that question.

Colonel CORBETT. Lieutenant Colonel Jim Corbett.

The Air Force has a P-1 line number for armored vehicles, and we procured in 1981 and 1982 under that P-1 line number for armored vehicles, not as sedans.

Mr. ADDABBO. You speak about armored vehicles, but I would like to read from your own justifications. They state that the vehicles are used as an escort vehicle for missiles being returned to base for maintenance, for perimeter patrol at missile sites and by explosive ordnance disposals for surveying areas. There is nothing in there that gives you the right to buy armored sedans for individuals, and as a matter of fact the law is quite specific on armored vehicles under Title 31, Section 38(a). And I read:

"Purchase or hire of vehicles: Unless specifically authorized by the appropriations concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of government other than those for the use of the President of the United States, the Secretary to the President, or the head of executive departments."

Again, I know you can go fishing for backup support, but the law is specific. The Army realized that and asked for language. We saw the need for these vehicles last year with the kidnaping in Italy. But now we suddenly see a proliferation. I wonder whether armored vehicles will be used as a status symbol amongst all the services.

You know our servicemen are out there in the field, and dollars are necessary to protect them. They are the ones out there with risking their lives, and to have people back in the big cities sitting around

in $100,000 armored vehicles unnecessarily becomes a little wasteful, I think, of defense dollars, unless it is carefully reviewed.

That is the responsibility of this committee. And so we would tell each and every one of you to cease and desist if you don't have special permission. We will be carefully reviewing your actual requests, and we would expect an actual request for armored vehicles in your budget. And if there is no actual request, we are not going to go by general language, because we want the American people to know and the Congress to know how the dollars are being spent when they are not actually being spent for military weapons.

Mr. MURTHA. Mr. Chairman, do we know where these 14 go?

Mr. ADDABBO. General or Colonel?

General DAVIS. Yes, sir. The 14 purchases for fiscal year 1982 were 7 Mercedes and 7 BMWs, all below the average cost specified in the language, and the distribution of those——

Colonel GONCZ. Colonel Goncz, sir.

Of the 14 that we procured in Europe, they supplemented 16 that we bought in fiscal year 1981 for a total buy of 30 vehicles. Those 30 vehicles were distributed as follows: 26 went to USAREUR, the various commands in the Army in Europe, 1 went to Turkey, and 3 went to Korea.

Mr. MURTHA. What is the lowest level to be riding in these vehicles?

Colonel GONCZ. I can only guess, sir.

Mr. MURTHA. How do you make a decision on who is going to get the vehicle? I understand the concern, but it seems to me that a terrorist, sees one person in an armored vehicle, or somebody else they can find as a target, pretty soon eveybody would have to have an armored vehicle out there in the field.

General DAVIS. The requirements are submitted to the USAREUR Provost Marshal, who reviews them for legitimate need. Each of these purchases is cleared by the Department of the Army Staff.

Mr. MURTHA. The request is made from the field, General Davis?

General DAVIS. Yes, sir, it is.

Mr. MURTHA. If you were over there as commander, would you feel you would need one of these armored cars to drive around in?

General DAVIS. It would depend on my function, my job and location, and whatever the threat might happen to be. It is a little difficult to answer that. Certainly as a brigadier general I would say I doubt it.

Admiral MILLER. May I comment to the Navy?

Mr. ADDABBO. Admiral.

Admiral MILLER. We have 8 vehicles in this request. It is in the form of a reprogramming because of the information that we have that certain of our senior officers are targets. We are planning on putting six of these vehicles in Italy, one in Puerto Rico, and one available to move around in the Pacific, depending upon our intelligence on the threat.

If there is a need for any more of these vehicles, we would certainly put it in the budget in the year that they are required. This is an emerging requirement for this year, and that is why it is in the form that it is. It is extremely important, Mr. Chairman.

Mr. MURTHA. Have any Marine commanders requested these armored vehicles?

Admiral MILLER. There will be occasions when senior Marines are traveling in danger areas when they will be using these vehicles; yes, sir.

Mr. MURTHA. But they didn't request them, did they?

Admiral MILLER. In the Navy we don't operate exactly that way, by request from the field. We are working more from the top down, based on what we know about the threat.

Mr. MURTHA. In other words, they didn't request from the field; you felt that there may be a threat, so you are sending a car out for them to ride around in?

Admiral MILLER. The entire picture of what is known about the local area plus our overall intelligence picture.

Mr. ADDABBO. Colonel Hannan.

Colonel HANNAN. Sir, we operate pretty much on the same basis. We have had some requests from the field in the past. We are now working at the Air Staff level to formulate a program based on future needs.

Mr. ADDABBO. How many have you purchased so far?

Colonel HANNAN. We purchased two in 1981. We have 15 funded in 1982.

Mr. ADDABBO. Fifteen in 1982?

Colonel HANNAN. Yes, sir.

Mr. ADDABBO. Fifteen were funded, hidden someplace. In the fiscal year 1982 bill, under Section 783, there is a limitation on buying from foreign manufacturers. General, you have mentioned Mercedes and BMWs. How did you get around that provision in the law?

General DAVIS. Sir, these purchases were made with the knowledge of the committee prior to that particular restriction in the law. Because of the threat and the location in which they were to be used, there was a requirement that the vehicles blend in with those of the local society. For example, the Mercedes in Europe have German plates on them, and the Mercedes blend in far better than a Chrysler or a Cadillac.

Another consideration was that they were immediately available, and at that time that was probably one of the overriding considerations.

Mr. ADDABBO. Are any of the armored vehicles to be used in the United States?

General DAVIS. Not at the present time.

Mr. MURTHA. Mr. Chairman, are they using any of these sedans in the United States?

Admiral MILLER. No, sir, not in the Navy.

Mr. MURTHA. The SAC Commander does not have one?

Admiral MILLER. No, sir.

Mr. ADDABBO. Was there any attempt by DOD to establish a pool of armored sedans rather than each service going off on its own? Has anybody tried to coordinate this at DOD?

Admiral MILLER. I believe there is an office in OSD that has cognizance over armored vehicles. However, from the standpoint of the Department of Defense, as I mentioned, we are fulfilling what we think is an immediate need, so we are going out.

Mr. ADDABBO. You have six. You have 14 more. That is 20. I don't know how many more the Air Force needs, but has anyone looked at the possibility of a consolidated buy or joint procurement in order to save some money? Has anyone looked at that?

Colonel HANNAN. Yes, sir, I would like to answer that, if I could. There is a DOD office overseeing this, the International Security Affairs, and they do host a Council on International Terrorism. As an option of this council, they are concerned about armored cars and armored car buys, and there was a meeting just two weeks ago where this was the subject of discussion.

They are working to try to formulate some type of plan, just like you said, of a single buy or a pooling of these resources. There is nothing established at this time, but this was the subject of discussion at that meeting.

Mr. ADDABBO. Colonel?

Colonel GONCZ. Sir, as I remember it, the vehicles that were procured in Germany for both the Air Force and the Army were both procured by the central procuring agency, the U.S. Army Contracting Agency, Europe.

Mr. ADDABBO. Do you know what the individual cost would be?

Colonel GONCZ. Yes, sir. They range from a low of about $15,600 to a high of $75,900. The low end of the spectrum were those used vehicles that we procured.

Mr. ADDABBO. Do you know what they cost the Navy?

Admiral MILLER. We have an estimate that we will be buying these cars for something less than $75,000 apiece new. It will go out on a competitive bid. They will all be left-hand drive cars, so that they don't fall under the requirement for the limit of $12,000.

I failed to mention before that the Navy's system will be that we will run a pool, so that these cars are not going to be assigned to an individual but they will be run by the Naval Investigative Service in a pool, and I explained to you where we were planning on positioning them.

Mr. ADDABBO. Colonel, do you know what they cost?

Colonel HANNAN. Yes, sir, the two cars we purchased in 1981 were used cars costing $28,300. The ones that we are purchasing in fiscal year 1982 are priced between $69,000 and $73,000.

Mr. ADDABBO. Is that fully armored?

Colonel HANNAN. Yes, sir.

Mr. ADDABBO. The gentleman from Alabama.

Mr. EDWARDS. Thank you, Mr. Chairman. I recall when you and I served on the Treasury-Post Office Committee—maybe we still do—and we talked about the status symbols there for Secret Service, for candidates, and I was the one who made the point there that status symbols looked like they were getting in the way of running the campaigns, and it was a week later that George Wallace got shot out in Maryland, so I am not going to talk about status symbols anymore.

I don't have any questions.

Mr. MURTHA. I will tell you one thing I am concerned about. When I was down in El Salvador, the American ambassador drove around in an old Cadillac, the only one I can imagine driving around the city. It was armored, of course, and it was obvious there were American personnel in the car.

I don't know how often they had been shot at, but they drove at high speeds. It seems to me it is more dangerous driving the car. The one time I was down there we flew into the area. Where they had the most guerrilla activity, on the road back in San Salvador they drove very fast.

I am sure you won't have that problem, but I just wonder if these won't be so distinctive. And you said you are trying to blend them in, but a general riding around in a Mercedes would seem to be more of a target than driving around in a regular sedan. I realize there are terrorists continually trying to find ways, but as I understand it, they are not really bulletproof. You can fire a .30 caliber right through the windows of these vehicles; isn't that accurate?

Colonel GONCZ. What we bought in Europe were the Mercedes Benz and the BMW because that is quite a typical vehicle over there. The thrust would be that these would be vehicles that would blend in with the typical vehicle on the highway. They have German license plates.

Yes, they generally would stand up to the best possible effort to blend them in. As to the level of hardening, they are not tanks. You are correct. They are hardened to the level of what we call 7.62mm. Armor-piercing Incendiary Tracer would pierce it.

Mr. MURTHA. They are hardened to that?

Colonel GONCZ. Yes, sir.

Mr. MURTHA. So a 7.62 would not penetrate the glass in one of those?

Colonel GONCZ. Anywhere in the vehicle, that is the level of hardening.

Mr. MURTHA. Is it just thick glass in the windows; is that what you have in the windows?

Colonel GONCZ. Sir, I don't know the technical details.

Mr. MURTHA. I know in El Salvador they said any bullet would penetrate that glass. You have a glass according to specifications that could not be penetrated by normal NATO weapons?

General DAVIS. If it was armor-piercing, it would penetrate. If it is an armor-piercing 7.62.

Mr. MURTHA. Are you more than concerned about a mine on the road? Is that the concern?

General DAVIS. On the basis of the General Kroesen incident, that obviously was, in retrospect, the thing that saved his and Mrs. Kroesen's lives, and I would say that is probably the more likely threat.

Mr. MURTHA. What were they riding in at the time, an armored vehicle?

General DAVIS. Fortunately, they were riding in an armored vehicle that had been forced upon them, by the way, by the German government three to five days prior to the incident. Very fortunate in retrospect.

Mr. MURTHA. At any rate, this could withstand—for instance, a tank can't really withstand a mine. It would knock the track off. I wonder when you are talking about withstanding a mine, you are talking about a normal explosive put in by an amateur on the road, or are you talking about a professional person putting a mine in the road?

General DAVIS. From the results of the incident in Europe, as I have read about it, I would have to say that they were fairly professional terrorists. Regarding the mine incident, you are correct. A large enough mine would blow up a tank tread, but this particular mine was large enough to have certainly killed the occupants in any normal automobile.

Mr. MURTHA. So they, then, didn't anticipate he would have been in an armored car. Obviously, if they were professionals, they would either have used a bigger charge or done it some other way?

General DAVIS. Yes, sir.

Mr. MURTHA. And so what you are talking about, then, you have a degree of security against explosion and very little against a fired projectile, because they would just use a large one in order to penetrate the automobile?

General DAVIS. That is correct.

Mr. MURTHA. Then I assume they reroute these people continually. Nobody knows what route they are following. That would be normal procedure?

General DAVIS. Yes, sir.

Mr. MURTHA. The windows are so thick it is quite obvious what kind of automobiles they are, at least the ones I have seen, and I just wonder how they are going to blend in. It is an awful expense.

I realize we want to protect people as much as we can, but it sure can become expensive. There are always those who are trying to create an incident in order to embarrass the United States. I know if someone gets hurt it is a tragic thing, but I wonder with the limited funds that are available, how far down the ranks we can afford to provide protection.

General DAVIS. A lot would depend on the threat, and our analysis of the threat. Fortunately, in the Kroesen incident the German government were the ones who analyzed the threat to be a very real one.

Mr. MURTHA. What you say is you have a pool of automobiles. Not necessarily the commander but whoever may be threatened would then be asked to ride in that particular automobile until the threat was over. I guess that makes more sense.

General DAVIS. Someone like the commander at Verona, Italy, yes, sir.

Mr. MURTHA. Just let me make clear that none of these cars will be used in the United States; is that accurate? Do all the services say the same thing?

Admiral MILLER. Except for Puerto Rico.

Mr. MURTHA. Hawaii, obviously, is part of the United States. That includes Hawaii.

General DAVIS. That is correct. There are no plans for any vehicles in Hawaii.

Mr. MURTHA. Thank you, Mr. Chairman.

Mr. ADDABBO. General, Admiral Miller has mentioned that the cars are assigned to a pool. As far as the Army is concerned, are they assigned to individuals or are they assigned to a pool?

Colonel GONCZ. I don't have the specific breakout, but some are assigned to individuals like the Commander in Chief in Europe and some are in a pool.

Mr. ADDABBO. Give the committee a breakdown as to how many are assigned to individuals and how many reassigned to a pool.

Does the Air Force assign them to a pool or to individuals, Colonel Hannan?

Colonel HANNAN. Sir, we do both. Right now the ones we have are assigned to specific positions. Some that we are buying are going to be broken up to specific positions. Some will be pooled to protective service details.

Mr. ADDABBO. Give us a breakdown.

Colonel HANNAN. Yes, sir.

[The information follows:]

The Air Force procured a total of 17 armored vehicles. Of these, two were procured in fiscal year 1981 and 15 in fiscal year 1982. The two procured in fiscal year 1981 are assigned to specific positions. Six of those procured in fiscal year 1982 will be assigned to specific positions; nine will be assigned to the Air Force Office of Special Investigation for protective service operations. All 17 of these vehicles are assigned in Europe.

Mr. ADDABBO. How many vehicles are being procured in fiscal year 1982?

[The information follows:]

Answer. *Army.*—Fourteen vehicles have been procured in fiscal year 1982.

Navy.—Eight armored vehicles are planned for procurement in fiscal year 1982.

Air Force.—Fifteen armored vehicles are being procured in fiscal year 1982, eight of which were delivered as of August 6, 1982.

Mr. ADDABBO. For the record, provide a breakout of prior year procurements, and those programmed for fiscal year 1983 and future years?

[The information follows:]

Army.—The Army procured sixteen armored sedans in fiscal year 1981 and fourteen in fiscal year 1982. Fiscal year 1983 requirements is for a quantity of twenty vehicles. No requirements have been developed beyond fiscal year 1983.

Navy.—There has been no prior year procurement of Navy armored vehicles. The following is a breakout of future year requirements for Armored Vehicles:

[Dollars in thousands]

Fiscal year	Quantity	Dollars
1983	2	170
1984	1	89
1985	2	186
1986	2	195
1987	2	203
1988	2	212

Air Force.—The Air Force procured two used armored vehicles in fiscal year 1981 and 15 new armored vehicles in fiscal year 1982. At this time, there are no armored vehicles programmed in fiscal year 1983 or future outyears. However, the Air Force is currently assessing both the overseas and CONUS threat with respect to follow-on requirements for armored vehicles. In all likelihood, we expect the threat analysis to dictate need for additional armored car procurement.

Mr. ADDABBO. Thank you very much, gentleman.

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THURSDAY, AUGUST 5, 1982.

MILITARY PERSONNEL, NAVY—APPROPRIATION UNDERFINANCING

REPROGRAMMING 82-66PA

WITNESSES

REAR ADM. RICHARD A. MILLER, DIRECTOR OF BUDGET AND REPORTS, OFFICE OF THE NAVY COMPTROLLER

R. G. GARANT, INVESTMENT AND DEVELOPMENT DIVISION, OFFICE OF BUDGET AND REPORTS, COMPTROLLER OF THE NAVY

INTRODUCTION

Mr. ADDABBO. The next request is No. 82-66 PA, Military Personnel, Navy, total programming request, $76,200,000.

The request and supporting papers will be made part of the record.

[The information follows:]

STATEMENT OF REAR ADM. RICHARD A. MILLER, USN

This prior approval reprogramming action provides for the inter-appropriation transfer of $76.2 million into the Military Personnel, Navy appropriation to fund substantial increases being experienced as a result of Navy's increased retention of personnel. This transfer is necessary in order to provide funds to accomplish the fiscal year 1982 planned manpower program.

In developing the fiscal 1982 funding estimates for pay and allowances for officers and enlisted, projection were made based on information current at that time, however, Navy has since recorded significant changes in its manpower program primarily as a result of increased retention and longevity. These two factors combined have caused substantial increases to occur in the average rates of pay and allowances for both officers and enlisted. Additionally, recent actual execution data are indicating that a greater number of personnel than originally estimated are now being paid BAQ at the higher "with dependent" rate and are also receiving a variable housing allowance. Also, actual experience data is reflecting additional costs in sea pay and submarine pay entitlements for both officers and enlisted personnel. These addditional costs being experienced can be traced to the meaningful increases in pay and benefits that the Congress has approved over the past two years. These funds will be used to support this aging of the force.

Funding sources for this reprogramming are available from three Navy procurement appropriations: Aircraft/Procurement, Navy; Weapons Procurement, Navy; and Other Procurement, Navy. Numerous items from these appropriations provide for the offset.

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Page 1 of 6 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE							DOD SERIAL NUMBER	
Military Personnel, Navy, FY 1982 (Includes Transfer)							82-66PA	
COMPONENT SERIAL NUMBER	(Amounts in Thousands of Dollars)							
FY 82-16 PA								
LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming action requests authority to transfer $76.2 million to Military Personnel, Navy, FY 1982 to fund unbudgeted cost increases. The proposed sources for funding the transfer are Aircraft Procurement, Navy, 82/84 ($17.0 million); Weapons Procurement, Navy, 82/84 ($7.0 million); and Other Procurement, Navy, 82/84 ($52.2 million). This action is submitted for prior approval since it involves inter-appropriation transfer authority pursuant to section 733 of P.L. 97-114. This request is for a higher priority item than those for which funds were originally appropriated, meets all administrative and legal requirements of the Congress, and has not been previously denied by the Congress. This action is not reflected in the FY 1982 column of the FY 1983 President's Budget. The President's Budget included $64.3 million for "appropriation act under financing" which the House Appropriations Committee has denied. Savings generated through program adjustments, which otherwise would be used to offset the increased pay and allowances, must now be used to offset the denied funding.

REPROGRAMING INCREASES

FY 1982 Program

Military Personnel, Navy, FY 1982 -

Budget Activity 1: Pay and Allowances of Officers

- 2,056,654 - 2,056,654 - +36,952 - 2,093,606

Explanation: The additional funding will provide $35.0 million for pay and allowances relating to increased retention and longevity in the officer community and $2.0 million for increased number of members entitled to submarine duty pay and sea duty pay.

Budget Activity 2: Pay and Allowances of Enlisted

- 5,827,488 - 5,827,488 - +39,248 - 5,866,736

Explanation: The additional funding will provide $32.7 million for pay and allowances relating to increased retention and longevity of enlisted personnel and $6.5 million for unbudgeted cost increases in the following incentive and special pays and allowances: Submarine

UNCLASSIFIED

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Page 2 of 6 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE	DOD SERIAL NUMBER
Military Personnel, Navy, FY 1982 (Includes Transfer)	82-66PA

DOCUMENT SERIAL NUMBER	(Amounts in Thousands of Dollars)
FY 82-16 PA	

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

Duty Pay, Sea Duty Pay, Overseas Extension Pay, Family Separation Allowance.

TOTAL MPN, FY 1982 REPROGRAMING INCREASES +76,200

TOTAL REPROGRAMING INCREASES +76,200

REPROGRAMING DECREASES

FY 1982 Program

Aircraft Procurement, Navy, 82/84

Budget Activity 5: Modification of Aircraft

1. P-3 Series - 104,400 - 104,400 - -15,000 - 89,400

Explanation: As a result of contractor failure to meet the delivery schedule on the P-3 Infrared Detecting Set (IRDS) modification program, reorder leadtime is sufficiently protected to allow deferral of the FY 1982 program. Therefore, funds originally appropriated for this purpose may be applied to emergent, high priority programs.

2. A-6 Series - 111,100 - 111,100 - -2,000 - -109,100

Explanation: Favorable negotiation of the A-6 Rewing and CAINS contracts has resulted in savings which can be applied to emergent, high priority requirements.

TOTAL APN, 82/84 REPROGRAMING DECREASE -17,000

Weapons Procurement, Navy, 82/84

Budget Activity 2: Other Missiles

1. AGM-84 A HARPOON	240	232,500	240	232,500	-	-3,000	240	229,500
2. RIM-66C Standard MR	120	61,500	120	61,500	-	-1,000	120	60,500

UNCLASSIFIED

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3 6
Page __ of __ Pages

REPROGRAMING ACTION

Military Personnel, Navy, FY 1982 (Includes Transfer) — DD SERIAL NUMBER 82-66PA

EXHIBIT SERIAL NUMBER FY 82-16 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
PRIOR APPROVAL ACTION								
3. RIM-66B Standard MR	600	164,600	600	164,600	-	-1,000	600	163,600
4. RIM-67B Standard ER	375	214,800	375	214,800	-	-1,000	375	213,800
Budget Activity 4: Other Weapons								
1. Initial Spares (CIWS)	-	33,700	-	33,700	-	-1,000	-	32,700

Explanation: Funds identified as offsets reflect known or anticipated cost savings as a result of contract negotiations or reflect funds for which the requirement has been determined to be of lower priority than the emergent FY 1982 requirements cited for increase.

TOTAL WPN, 82/84 DECREASES						-7,000		
Other Procurement, Navy, 82/84								
Budget Activity 1: Ships Support Equipment								
1. Other Generators	-	3,167	-	3,167	-	-806	-	2,361
2. Other Navigation Equipment	-	10,473	-	10,473	-	-1,014	-	9,459
3. Air Conditioners	-	9,041	-	9,041	-	-60	-	8,981
4. Steam Propulsion Improvement Prog	-	13,684	-	13,684	-	-3,400	-	10,284
5. Other Propulsion Equipment	-	4,097	-	4,097	-	-650	-	3,447

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Page 4 of 6 Pages

REPROGRAMING ACTION

Appropriation Account Title: Military Personnel, Navy, FY 1982 (Includes Transfer)

DOD Serial Number: 82-66PA

Component Serial Number: FY 82-21 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by L/C 087		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
PRIOR APPROVAL ACTION								
6. Damped Propellers	-	9,942	-	9,942	-	-500	-	9,442
7. Trident Support Equipment	-	17,372	-	17,372	-	-1,300	-	16,072
8. HM&E Items Under $900K	-	6,324	-	6,324	-	-1,000	-	5,324
9. Surface IMA	-	16,510	-	16,510	-	-1,500	-	15,010
10. Other Training Equipment	-	4,120	-	4,120	-	-700	-	3,420
Budget Activity 2: Communications and Electronics								
1. AN/SPS-40	-	7,003	-	7,003	-	-1,446	-	5,557
2. AN/SYS-( )	-	5,195	-	5,195	-	-2,227	-	2,968
3. AN/SQS-26	-	37,705	-	37,705	-	-2,000	-	35,705
4. AN/BQQ-5	-	89,938	-	89,938	-	-2,000	-	87,938
5. NTDS	-	25,443	-	25,443	-	-9,000	-	16,443
6. Ship Communication Items Under $900K	-	3,854	-	3,854	-	-65	-	3,789
7. SSEP Support	-	2,034	-	2,034	-	-554	-	1,480
8. Other Training Equipment	-	2,236	-	2,236	-	-100	-	2,136

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Page 5 of 6 Pages

REPROGRAMING ACTION

Military Personnel, Navy, FY 1982 — DOD SERIAL NUMBER: 82-66PA

COMPONENT SERIAL NUMBER: FY 82-16 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
PRIOR APPROVAL ACTION								
9. ACLS Nav/Det Support	-	7,973	-	7,973	-	-700	-	7,273
10. RADIAC	-	3,633	-	3,633	-	-500	-	3,133
11. Elect Items Under $900K	-	1,623	-	1,623	-	-150	-	1,473
12. SATCOM Shore Terminals	-	11,828	-	11,828	-	-1,000	-	10,828
13. Shore Communication Items Under $900K	-	3,753	-	3,753	-	-300	-	3,453
14. Signal Security	-	4,521	-	4,521	-	-850	-	3,671
15. COMSEC Items Under $900K	-	1,142	-	1,142	-	-700	-	442
16. Spares and Repair Parts	-	52,477	-	52,477	-	-1,796	-	50,681
Initial Spares	-	(52,477)	-	(52,477)	-	(-1,796)	-	(50,681)
Budget Activity 4: Ordnance Support Equipment								
1. 5"/54 Ammo Components	-	57,604	-	57,604	-	-2,200	-	55,404
2. CIWS Ammo	-	18,432	-	18,432	-	-1,000	-	17,432
3. Gun Fire Control Equipment	-	49,046	-	49,046	-	-6,870	-	42,176
4. SMS ORDALTS' Area Defense TARTAR	-	72,576	-	72,576	-	-4,812	-	67,764

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Page 6 of 6 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE: Military Personnel, Navy, FY 1982 (Includes Transfer)

DOD SERIAL NUMBER: 82-66PA

COMPONENT SERIAL NUMBER: FY 82-16 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
PRIOR APPROVAL ACTION								
Budget Activity 7: Personnel and Command Support								
1. Computer Acquisition Program	-	27,541	-	27,541	-	-1,500	-	26,041
2. WWMCCS ADPE	-	1,819	-	1,819	-	-500	-	1,319
3. Supply Support ADPE	-	5,786	-	5,786	-	-500	-	5,286
4. Personnel Support ADPE	-	8,201	-	8,201	-	-500	-	7,701

Explanation: The following reductions represent the termination of the DDG-2 AAW Modernization Program upon the completion of two ships: Other Generators ($806,000), Other Navigation Equipment ($1,014,000), Air Conditioners ($60,000), AN/SPS-40 ($446,000), AN/SYS-( ) ($2,227,000), Navy Tactical Data System ($8,000,000), Ship Communication Items Under $900K ($65,000), Gun Fire Control Equipment ($6,870,000), SMS ORDALTS: Area Defense TARTAR ($4,812,000). Total savings from this program termination amount to $24,300,000.

The balance of the program decreases reflect funds for which the requirement has been determined to be of lower priority than the emergent FY 1982 requirements cited for increase.

TOTAL OPN, 82/84 DECREASES						-52,200		
TOTAL REPROGRAMING DECREASES						-76,200		

APPROVED (Signature and Date)

Frank C. Carlucci 3 AUG 1982

DD FORM 1415 - 1

UNCLASSIFIED
CLASSIFICATION

Replaces DD Form 1415, 1 Feb 65 & DD Form 1415-1, 1 Jan 75, which are obsolete.

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Mr. ADDABBO. This request is to cover, basically, the result of higher retention of personnel than was anticipated. Rear Admiral Miller, Director of Budget and Reports, Office of the Navy Comptroller, will present the request.

Admiral Miller.

Admiral MILLER. Mr. Chairman, very briefly, this is a prior approval reprogramming for $76 million to the military personnel Navy account. It is necessary in order to provide funds to accomplish the fiscal year 1982 planned manpower program.

In developing the fiscal year 1982 program, we based it on the most current information available at the time that the budget was put together. The Navy has since reported significant changes in its manpower program primarily as a result of increased retention and increased longevity of our force. That is the reason for this reprogramming today.

The sources for this reprogramming are from three Navy procurement appropriations. Aircraft Procurement, Navy; Weapons Procurement, Navy; and Other Procurement, Navy. I would be happy to answer your questions, Mr. Chairman.

Mr. ADDABBO. Thank you, Admiral.

PURPOSE OF THE REPROGRAMING

A large part of this request is to cover the high retention rates that nobody aniticipated earlier in the fiscal year. Can you please describe the management steps you are taking to be sure that these surges in recruiting and retention are not producing imbalances in the force in terms of age or skills that might affect readiness?

[The information follows:]

One of our major concerns in growing the Navy to man a 15 Battle Group Navy is to ensure that our inventories are in the proper skills to man the Navy of today and the future. In today's environment of high retention and achieving our recruiting goals we must be particularly careful to properly manage our inventories. We manage our inventories at three critical points in an individual's career. These points are at the entry level, at the reenlistment decision points and at the advancement points. We manage entry level flow into the pipeline through the "A" School Plan and non-designated striker training plan to ensure the proper distribution of first term personnel throughout Navy's rating structure. At the career decision points, we use the Career Reenlistment Objective System to ensure that individuals do not reenlist in ratings which have the potential of being overmanned. Additionally, we use this system to restrict reentry into these ratings by prior service personnel. At the advancement points, we advance only to rating specific paygrade vacancies. If retention in a particular rating has been significantly higher than anticipated, then we restrict the number advanced to that rating as exemplified by the advancements to E-7 in the YN rating: last year's advancement quotas to E-7 were 285; this year because of enhanced retention advancement quotas to E-7 were 50.

Mr. ADDABBO. Are you also taking steps to capitalize on this fortuitous trend to enhance the quality of the force? Please describe your major efforts in this regard.

[The information follows:]

Yes, we have taken steps to enhance the quality of the force, primarily with respect to the quality of our recruits. Specifically, we have raised our recruiting quality goals in fiscal year 1982 as follows: MG I-IIIU, we raised from 60 percent in fiscal year 1981 to 62 percent in fiscal year 1982; we lowered our MG IV ceiling, all of whom must be high school diploma graduates from 13 percent in fiscal year 1981 to 12 percent in fiscal year 1982; finally, we anticipated that 75 percent of our non-prior service male recruits will be high school diploma graduates as compared to

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73.7 percent for last year. We have emphasized growing our Delayed Entry Program (DEP) pool during fiscal year 1982 which will have its pay-off in fiscal year 1983 when we experience lower attrition since DEP recruits attrite at a third of the rate of direct ships. Finally, enhanced retention will result in a growth in the experience mix of the force. Specifically, we anticipated growing our percentage of the enlisted force in the career force (those with 5 or more years of service) from 43.3 percent in fiscal year 1981 to 44.2 percent in fiscal year 1982, thus enhancing our experience mix.

Mr. ADDABBO. Are you satisfied overall that you are taking the right steps to manage these trends to keep readiness and morale of the troops high?

[The information follows:]

Overall improvements in retention and recruiting over the past year are having a positive effect on readiness and morale. However, it will take several years with the continued support of Congress to both reduce our petty officer shortfall and to fill the manpower requirements of our growing Navy.

Mr. ADDABBO. Admiral, do you think you now have a handle on the magnitude and force of these recruiting and retention trends so that we can have more confidence in your projections of strength?

Admiral MILLER. Yes, sir, certainly at this late date in this fiscal year we know quite precisely the effects of what is going on this year. Of course, I have to say that the 1983 budget had requirements for personnel which did not anticipate the increased retention that we have seen in 1982, and quite possibly we will see in 1983. We are monitoring that very closely, taking whatever actions we can to rebalance our program.

Mr. ADDABBO. In addition to the requirement that arises from increased retention, this reprogramming proposes to cover the costs of certain programs' underestimates. Provide for the record a detailed statement of the reasons for these increases, the amounts involved for each, and the original estimate for each. The programs and activities include the BAQ with dependent program, the variable housing allowance program, sea pay, and submarine pay.

[The information follows:]

The amount requested and the additional funding required for the programs which are under-estimated in the original budget request are as follows:

[In millions of dollars]

	Original request	Additional requirement
Basic allowance for quarters (BAQ)	836.532	15.188
Variable housing allowance (VHA)	256.481	12.217
Sea duty pay	179.657	4.920
Submarine duty pay	62.141	3.980

The current estimated requirement for these entitlements is based on actual fiscal year 1982 payment data which reflects the impact of improved retention on certain entitlements which was not reflected in the fiscal year cost data used in developing the original budget request.

BAQ/VHA.—The increase in these entitlements is attributable to a higher than anticipated retention rate of BAQ-VHA eligible personnel. This in conjunction with the Navy's "Projected Upgrade" which separated a large number of junior enlisted personnel, the majority of whom would not have been entitled to a full BAQ or a VHA payment, translates into 5,118 and 7,518 additional payments of BAQ and VHA, respectively.

BEST DOCUMENT AVAILABLE

Sea and submarine duty pay.—The increased requirement for these pays is based on actual fiscal year 1982 payment data which reflects a richer pay grade mix and a greater number of members entitled to payment than was originally projected. The additional funding will provide for increase of 472 and 1,986 payments of sea and submarine duty pay respectively.

SOURCE OF FUNDS

INFRARED DETECTING SET

Mr. ADDABBO. Turning now to the question of the source of funds, one source of funds for this program you have requested is to defer $15 million from the P-3C modification program, specifically the Infrared Detecting Set which has been in procurement since fiscal year 1972. These funds became available because of the contractor's failure to meet the delivery schedule on the P-3 Infrared Dectecting Set modifiction. Can you tell the committee what caused this slippage?

Admiral MILLER. I can't tell you exactly what caused the slippage. I will provide that for the record. But in general, the contractor had some technical difficulties with regard to the production of these sets. We now see that it is not necessary to put additional sets on contract in 1982, and we would slip that requirement into 1983, and add the sets that he failed to deliver in 1982 to the end of the buy. I will provide the technical reason for the record, if I may.

[The information follows:]

The contractor encountered problems with the detector head portion of this modification and was unable to meet their required delivery date. They also encountered administrative problems in the signing of their 1982 contract, and were unable to meet a September 1982 deadline. The production problem has been resolved and the contract will be signed in October 1982, utilizing $20.1 million budgeted in fiscal year 1983.

Mr. ADDABBO. You state that recorder leadtime is sufficiently protected to allow deferral of the fiscal year 1982 program. Exactly how is the leadtime protected when you defer procurement for one year?

[The information follows:]

The contractor encountered problems with the detector head portion of this modification and was unable to meet their required delivery date. They also encountered administrative problems in the signing of their 1982 contract, and were unable to meet a September 1982 deadline. The production problem has been resolved and the contract will be signed in October 1982, utilizing $20.1 million budgeted in fiscal year 1983.

Because of delay in awarding the fiscal year 1981 contract, the fiscal year 1982 program can be deferred without precipitating a break in the production line. Therefore, recorder leadtime is sufficiently protected to allow restructuring of the program. The government will not incur the additional costs which would be necessary if the production line were to stop and then be restarted at a later time.

Mr. ADDABBO. Are you requesting funds for the Infrared Detecting Set modification program in fiscal year 1983, and how much are you requesting?

Admiral MILLER. Yes, sir, we are.

Mr. GARANT. It is in the same amount.

Mr. ADDABBO. You are not going to find funds from other sources and move the 1982 funds to the 1983 program?

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Mr. GARANT. We have funds in the 1983 program which are a similar amount to this, but we are not going to ask for any more in 1983 because of this reprogramming.

Mr. ADDABBO. You are not giving up now this year only to ask for it next year?

Admiral MILLER. No, sir.

Mr. GARANT. If I might add, it will show up in the 1988–1989 time frame at the end of the line. They just extend over a longer period by one year.

COST SAVINGS IN MISSILE PROCUREMENT ACCOUNT

Mr. ADDABBO. You are also taking $6 million from four missile procurement accounts, the total fiscal year 1982 appropriation for which is $673.4 million. You state that this $6 million is available because of "cost savings." This is less than 1 percent. Do you feel that we may find other savings as we go along in this account?

Admiral MILLER. Specifically, the Harpoon account is where we are saving $3 million. That is a result of a contract savings where we negotiated the contract for a lower price than we had budgeted. The standard missile, reprogramming of $1 million resulted from a realignment of some tooling requirements that we had for the support of production. The realignment produced excess funds of $1 million.

The other two items were the RIM–66 and the RIM–67 where, again, realignments having to do with testing requirements for those missiles.

Mr. ADDABBO. A cost savings through contract negotiations of less than one percent seems rather low. Is this the Navy's usual experience? Are further savings anticipated?

[The information follows:]

The contract savings in fiscal year 1982 for the HARPOON missile represented 4 percent of initial budget estimates and, while such favorable awards do occur, it would be difficult to claim such successes to be the usual experience. No further savings are currently anticipated in fiscal year 1982 for the HARPOON missile program but these reduced fiscal year 1982 costs have been incorporated in latest HARPOON program estimates for subsequent years.

Mr. ADDABBO. What specifically are the items in these accounts which are now of lower priority?

[The information follows:]

The offset of one million dollars identified under initial spares is based upon anticipated contract negotiation savings in fiscal year 1982. The reprogramming action cites the CIWS program as the most likely source of the majority of savings since the bulk of spares requirements in Budget Activity 4 are associated with this program. Any funding impact that might result if these savings are not, in fact, realized will be accommodated in subsequent years.

DDG–2 CLASS SHIPS

Mr. ADDABBO. Another source of funds for this reprogramming is $24.3 million from Other Procurement, Navy, which was provided for the modernization of DDG–2 class ships.

If I recall correctly, at the committee markup of the fiscal year 1982 bill we proposed a reduction of $56.2 million for this program. A hue and cry was raised by the Navy that they could not live with such a cut, and the funds were then restored.

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I just wonder how carefully you really review our cuts, or do you automatically say you can't live with it and then later on use it as your own slush fund.

Admiral MILLER. Mr. Chairman, obviously in hindsight your judgment was better than ours at the time, but subsequent to that, we had a complete reevaluation of this modernization program, and it was determined that the amount of additional capability that we were putting into these ships really didn't give the ships the firepower that we felt we needed for the threat of the future. So on a cost-effectiveness basis, we did cancel that modernization program.

Mr. ADDABBO. Cancellation of the $56.6 million of the OPN funding will preclude procurement of combat systems and HM&E components required for installation over all of the four remaining ships in the 6-ship program. That is your reclama language. Last year you had $56.6 million included in this line item. You are proposing reprogramming only $24.3 million. Will the balance of $22.3 million be reprogrammed later on?

Admiral MILLER. One of the ships is already under construction, and is too far along for us to cancel cost effectively, so that amount is actually being expended on the ship.

Some of the funds for this modernization program have already been obligated, so they are not completely restorable. However, I have to point out that the equipments that are bought for this modernization are available for use on other ships, so we will be diverting those purchases to other requirements, to spares, and so forth.

Mr. ADDABBO. So there will be savings elsewhere?

Admiral MILLER. Yes, sir.

REALIGNMENT OF OPN PROGRAMS

Mr. ADDABBO. Another $29.9 million is being proposed for transfer from numerous "lower priority" procurement lines in the Other Procurement, Navy, appropriation as a source of funds. How much of this will have to be replaced in future years?

Admiral MILLER. Aproximately one third of the items are being marked on the basis of their obligation rate in 1981, and could fall into the category that you just described as possible requirements for funding at a later time.

When we received the information on the actual obligations for the 1981, we found that certain of these items had not obligated up to their planned amounts. To the extent that they hadn't, those obligation availabilities are then available to put against the 1982 requirement or the 1983 requirement as we slip this program out.

Eventually some of these will have to be replaced at the end of the production line, so to that extent the answer to your question is yes, they could be rebudgeted.

Mr. ADDABBO. Since other sources of funds have come from terminated programs and contracts savings, is it fair to conclude that the Other Procurement appropriation has the lowest priority in the Navy.

[The information follows:]

The Other Procurement, Navy (OPN) appropriation does *not* have the lowest priority in the Navy. In fact, it would be an extremely difficult task to prioritize Navy appropriations since each appropriation contains high priority, middle priroity, and lower priority (relatively speaking) programs. In the case at hand, the Navy decided to use lower priority programs from the OPN appropriation to offset the reprogramming increase because OPN, as a minor procurement appropriation, is composed of a multitude of relatively small contractural actions which can be rescheduled with greater ease than the smaller quanity of more expensive contractual actions associated with the major procurement appropriations (Aircraft Procurement, Shipbuilding and Conversion, and Weapons Procurement).

Mr. ADDABBO. Why is the Other Procurement appropriation the only one with lower priority?

[The information follows:]

The Other Procurement, Navy (OPN) appropriation is not the only appropriation with lower priority programs. It is fair to state that all Navy appropriations contain a mix of high priority, middle priority, and lower priority (relatively speaking) programs. In the instant case it was a Navy management decision to cite OPN programs as offsets for the reprogramming increases.

Mr. ADDABBO. About $54 million is being reprogrammed out of the Other Procurement, Navy appropriation. Other Procurement, Navy, had a 22 percent increase in budget last year. I am just wondering whether this account is going to be made similar to the ammo account, slush fund reprogramming.

Admiral MILLER. No, sir. Mr. Chairman, it is not our intention to do that at all. We try to budget it as close as we possibly can, and on occasion we are not able to get a particular system on contract in the anticipated time, and those funds do become available, but we certainly expect that that is the exception.

Mr. ADDABBO. The gentleman from Alabama.

Mr. EDWARDS. I have no questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Washington.

Mr. DICKS. No questions, Mr. Chairman.

Mr. ADDABBO. Thank you very much, Admiral.

Admiral MILLER. Thank you, sir.

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THURSDAY, AUGUST 5, 1982.

RESERVE PERSONNEL—UNIT AND INDIVIDUAL TRAINING

REPROGRAMMING 82-52PA

WITNESSES

BRIG. GEN. HAROLD M. DAVIS, JR., DIRECTOR OF THE ARMY BUDGET, OFFICE OF THE COMPTROLLER OF THE ARMY

JOHN ANDERSON, CHIEF, COMPTROLLER DIVISION, OFFICE OF THE CHIEF OF ARMY RESERVE

INTRODUCTION

Mr. ADDABBO. Our next reprogramming is Army 82-52PA, Reserve Personnel Individual Training.

General DAVIS. Mr. Chairman, in the interest of the committee's time, I submit the statement for the record and summarize the high points of this particular reprogramming.

[The statement and the reprogramming document follow:]

STATEMENT BY DIRECTOR OF THE ARMY BUDGET

Mr. Chairman and members of the subcommittee: It is a pleasure for me to appear before you today and I appreciate the opportunity to present this reprogramming action which supports increased accessions of non-prior service personnel into the Army Reserve.

The purpose of this reprogramming action is to transfer $3.5 million from the Operation and Maintenance, Army Reserve Appropriation to Reserve Personnel, Army Appropriation Budget Activity 1, Unit and Individual Training.

During the first half of fiscal year 1982, I am proud to report, the U.S. Army Reserve has experienced a surge in the recruitment of non-prior service personnel (recruits) while maintaining our projected retention rate. As a result of these favorable actions, the projected average end strength for fiscal year 1982 has increased from 227,039 to approximately 229,300. Preliminiary May strength is 235,553 clearly indicating the potential of attaining the revised forecasted end strength of 237,000.

These increases in strength translate into a need for 13,400 additional man-months for initial active duty training, which in turn equates to a funding requirement of $8.8 million. Internal adjustments resulting from other program slippage will provide a $5.3 million partial offset to this requirement.

I seek your approval of the transfer of $3.5 million to support this significant increase in the number of young men and women who have been recruited into the U.S. Army Reserve.

Again, Mr. Chairman, I want to thank you and the members of your committee for your time. I am prepared to accept your questions at this time.

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Page 1 of 2 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE							SSD SERIAL NUMBER
RESERVE PERSONNEL, ARMY, FY 1982							FY 82-52 PA
COMPONENT SERIAL NUMBER	(Amounts in Thousands of Dollars)						
FY 82-39 PA							
LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY / AMOUNT
a	b	c	d	e	f	g	h / i

PRIOR APPROVAL ACTION

This action requires prior approval since it requests appropriation transfer pursuant to the authority of Section 733, P.L. 97-114, Department of Defense Appropriation Act, 1982 and is therefore a matter of special interest to the Congress. This action transfers $3.5 million from the Operation and Maintenance, Army Reserve appropriation to the Reserve Personnel, Army appropriation, to support Army Reserve troop program unit accelerated accessions. This funding transfer is for a higher priority items, has not been previously denied by Congress, and meets all the administrative and legal requirements of the Congress. This action is not reflected in the FY 1982 column of the FY 83 President's Budget.

REPROGRAMING INCREASE: FY 1982

Reserve Personnel, Army, FY 1982

Budget Activity 1: Unit and Individual Training	635,900	651,160	+3,500		654,660

EXPLANATION: The requested increase in Budget Activity 1 will provide for commencement of initial active duty for training (IADT) for 3600 nonprior service (NPS) soldiers. This improved training capability results from unprecedented surges in accessions into the Army Reserve during the first half of FY-82. Year-to-date actual accessions into the Selected Reserve who have joined units and are awaiting IADT without pay exceeds the plan by 4000. To prevent these 3600 NPS soldiers from training during FY-82 would have impact on USAR readiness as well as impact drastically on FY-83 training seat availability and expense.

TOTAL PROGRAM INCREASE:			+3,500		
NET CHANGE IN PROGRAM:			+3,500		

REPROGRAMING DECREASE:

Operation and Maintenance, Army Reserve, FY 1982

Budget Activity 3: Other Support	233,590	241,790	-3,500		238,290

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Page 2 of 2 Pages

REPROGRAMING ACTION

RESERVE PERSONNEL, ARMY, FY 1982

FY 82-52 PA

FY 82-39 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM DATA REFLECTING (ENACTED/REVISED) ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						

EXPLANATION: Because of the high level of success achieved in recruiting for the Army Reserve in the current depressed economy, objectives can be met without expenditure of total resources budgeted for recruiting and advertising.

TOTAL PROGRAM DECREASE: -3,500

NET CHANGE TO PROGRAM: -3,500

Frank C. Carlucci
Deputy Secretary of Defense

DD, FORM 1415 - 1

Unclassified

8 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 71, which are obsolete.

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General DAVIS. This request will provide $3.5 million for initial active duty training for 3,600 non-prior service Army Reserve personnel. Moreover, the training supported by this reprogramming will be less disruptive to our training sent management this year than it would be if deferred until fiscal year 1983.

The offsetting decrease of $3.5 million is in the O&M Army Reserve account which supports this reprogramming is the result of lessened recruiting and advertising costs.

I am now open to your questions.

PURPOSE OF REPROGRAMMING REQUEST

Mr. ADDABBO. We are always happy to see higher retention, but we look at the document and it shows that the actual accessions into the Selective Reserve who have joined units and are now awaiting initial active duty training (IADT) exceeds the plan by 4,000. But you are asking for training funds to cover only 3,600.

If it impacts readiness and fiscal year 1983 training seat availability not to train the 3,600, why wouldn't you make the request to train the entire 4,000?

General DAVIS. The funding associated with the increased strengths equates to a requirement of about $8.8 million. However, through internal adjustments within the appropriation and other program slippages $5.3 million was generated toward the total requirement of $8.8 million, and thus are asked to reprogram only $3.5 million additional reprogramming from OMAR into RPA.

Mr. ADDABBO. Supply for the record the reason you make up the $3.5 million and also a breakdown of the $5.3 million.

General DAVIS. Yes, sir.

[The information follows:]

The $3.5 million requested transfer from the Operation and Maintenance, Army Reserve appropriation is available primarily because recruiting successes have mitigated anticipated expenses. In particular, recruiter and applicant costs have been reduced by $.7 million and vehicle lease costs have been reduced by $1.5 million due to lower mileage per vehicle. Other support costs including recruiter expenses, ADP support, and civilian pay account for the remaining $1.3 million.

The $5.3 million excess within the Reserve Personnel Army appropriation used to offset the Pay Group F shortage will come from the US Army Reserve Incentives Program and the Army Reserve Subsistence accounts. Underutilization of enlistment bonuses, educational assistance, and affiliation bonuses is projected to generate an excess of $4.0 million. An overoptimistic estimate in the use of enlisted rations for Inactive Duty Training (IDT) and Annual Training (AT) is expected to yield a $1.3 million surplus. Although strength has risen, our ability to forecast expenditures in this account remains a function of each meal's attractiveness, the proximity of commercial dining facilities to the training site, and the unit's command policy.

Mr. ADDABBO. As I understand it you are still holding to your end strength projection of 237,000, but the average strength is up from 227,039 to 239,000. Do you still feel as you did earlier in the year that your management policies are effectively helping you to improve the quality of these recruits—as their numbers increase? Are you capitalizing on this opportunity to improve quality?

[The information follows:]

First let me clarify that the average Paid Drill Strength of the USAR is up from 227,039 to an estimated 230,000 for fiscal year 1982.

Efforts to hold the Paid Drill Strength of the Army Reserve at 237,000 will allow the enlistment of only the most desirable applicants during the 4th quarter of this

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fiscal year. Non-prior service enlistments are now restricted to high school graduates and personnel who score in the top three mental groups on the Armed Service Vocational Aptitude Battery. Personnel who meet these stringent enlistment standards have demonstrated a higher propensity to complete training requirements and to fulfill their enlistment obligations.

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THURSDAY, AUGUST 5, 1982.

NATIONAL GUARD PERSONNEL UNIT AND INDIVIDUAL TRAINING

REPROGRAMMING 82-55PA

WITNESSES

BRIG. GEN. HAROLD M. DAVIS, JR., DIRECTOR OF ARMY BUDGET, OFFICE OF THE COMPTROLLER OF THE ARMY

HOWARD MANWEILER, CHIEF, PROGRAM AND BUDGET BRANCH, COMPTROLLER DIVISION, ARMY NATIONAL GUARD

INTRODUCTION

Mr. ADDABBO. The next reprogramming is for unit and individual training for National Guard Personnel, General Davis.

General DAVIS. For this particular reprogramming action, the highlights are that the request will fund an increase in average paid drill strength of 6,411 personnel for the Army National Guard.

The offsetting decreases are in the weapons and tracked combat vehicles appropriation, $13.8 million, due to reductions or delays in procurement; an 8-month delay in the Red River Army Depot modernization program; a favorable economic situation with the squad automatic weapon program; a $7.1 million offset from the Other Procurement, Army, appropriation due to the procurement delay of the KGV-6/TSEC(PLRS), as recommended by Congress until fiscal year 1983; and deferred procurement of the self-propelled high-speed compactor.

I am open to your questions, Mr. Chairman.

[The statement and reprogramming document follow:]

STATEMENT BY DIRECTOR OF ARMY BUDGET

Mr. Chairman and members of the subcommittee: It is a pleasure for me to appear before you today and I appreciate the opportunity to present this reprograming action which supports a paid drill strength increase for the Army National Guard. An earlier request for reprograming of $26.0 million for support of Army National Guard strength has been approved by this committee and was considered in preparation of the request.

The purpose of this reprograming action is to transfer $20.9 million from the other procurement, Army, and procurement of weapons and tracked combat vehicles, Army, appropriations to the National Guard personnel, Army appropriation.

During fiscal year 82, the Army National Guard has experienced a high degree of success in its recruiting and retention efforts. As a result, the fiscal year 82 average paid drill strength is projected to exceed program by 6,411 personnel, reaching an end stength in excess of 410,000 during this fiscal year. Pay Group A, personnel attending 48 drills and 15 days of annual training, will exceed the budget average by 5,852. Pay Group F, personnel attending Initial Active Duty Training (IADT), will exceed the budget average by 213. Pay Group P personnel participating in 24 drills in a paid status awaiting assignment into IADT will exceed the budget average by 346. These increases in average strength result in a requirement of $20.9 million. It is important to note that this increase will create an unfunded requirement of approximately $14.9 million by fiscal year 1983.

Funding of the $20.9 million shortfall in fiscal year 82 will be accomplished by transfer of $7.1 million from the other procurement, Army appropriation and $13.8 million from the procurement of weapons and tracked combat vehicles, Army appropriation.

The transfer from other procurement, Army is possible due to the delay of the KGV-6/TSEC (PLRS) procurement which was delayed by Congress until fiscal year 83 and elimination of the self-propelled high speed compactor to support this higher priority requirement. The compactor proucurement will be reinstated in future fiscal years.

The transfer of $13.8 million from the procurement of weapons and tracked combat vehicles, Army appropriation is possible due to a favorable economic situtation with the squad automatic weapon program, reductions or delays in procurement of smoke grenade launchers, repair and shop kits and an eight month delay in the Red River Army Depot Modernization Program. Each of these reductions or delays will require reinstatement in future fiscal years.

I request your approval for the transfer of $20.9 million to support the significant increase in strength of the Army National Guard.

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Page 1 of 3 Pages

REPROGRAMING ACTION

National Guard Personnel, Army, FY 1982 (Incl Transfer of Funds) — FY 82-55 PA

FY 82-27 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DSCSOP		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming proposal requires prior approval because it proposes use of the general transfer authority under the provisions of Section 733, PL 97-114, Department of Defense Appropriation Act, FY 1982. This increase is for higher priority item, based on unforeseen military requirements, than those for which originally appropriated, and has not been previously denied by the Congress. This proposal meets all the administrative and legal requirements of Congress, and is not reflected in the FY 1982 column of the FY 1983 President's budget.

REPROGRAMING INCREASE, FY 1982 PROGRAM

NATIONAL GUARD PERSONNEL, ARMY, 1982

Unit and Individual Training — 924,453 — 950,453 — +20,900 — 971,353

Explanation: The $20.9 million is required to support an increase in strength due to improved recruiting and retention action resulting in a projected average Pay Group A (5,852), Pay Group F (213), and Pay Group P (346). The shortage will be funded by transfers from the Procurement of Weapons and Tracked Combat Vehicles, Army, and Other Procurement, Army 82/84, appropriations.

TOTAL REPROGRAMING INCREASE — +20,900

NET CHANGE IN PROGRAM, NATIONAL GUARD PERSONNEL, ARMY, 1982 — +20,900

REPROGRAMING DECREASES, FY 1982 PROGRAM

PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984

Budget Activity 1: Tracked Combat Vehicles

Tank, Combat, FT, 105mm Gun, M60 Series (MOD) — XX — 154,300 — XX — 156,400 — - 9,900 — XX — 146,500

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Page 2 of 3 Pages

REPROGRAMING ACTION

Appropriation Account Title	DOD Serial Number
National Guard Personnel, Army, FY 1982 (Incl Transfer of Funds)	FY 82-55 PA

Component Serial Number	(Amounts in Thousands of Dollars)
FY 82-27 PA	

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by SEC DEF		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						

Explanation: This reduction precludes establishment of an alternate procurement source for Thermal Sights, planned in support of increased competition acquisition initiatives. This item is being reduced in favor of the higher priority requirement. Reinstatement may be necessary in future fiscal years.

Budget Activity 2: Weapons and Other Combat Vehicles								
Launcher, Smoke Grenade (Mods)	XX	4,500	XX	4,600	-	- 1,500	XX	3,100

Explanation: This reduction will cause a 30 percent reduction in units procured and stretch out the program to equip armored vehicles. This item is being reduced in favor of the higher priority requirement. Reinstatement will be necessary in future fiscal years.

Items Less Than $900,000 (WOCV-WTCV)	XX	3,400	XX	3,500	-	- 2,400	XX	1,100

Explanation: This reduction will delay the procurement of a variety of repair and shop kits. This item is being reduced in favor of the higher priority requirement. Reinstatement will be necessary in future fiscal years.

TOTAL REPROGRAMING DECREASE						-13,800		
NET CHANGE IN PROGRAM, PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY 1982/1984						-13,800		

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Page 3 of 3 Pages

REPROGRAMING ACTION

APPROPRIATION/BUDGET TITLE	DOD SERIAL NUMBER
National Guard Personnel, Army, FY 1982 (Incl Transfer of Funds)	FY 82-55 PA
COMPONENT SERIAL NUMBER: FY 82-27 PA	(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
OTHER PROCUREMENT, ARMY, 1982/1984								
Budget Activity 2: Communications and Electronics Equipment								
KGV-6/TSEC	1,097	3,700	1,097	3,600	- 1,097	- 3,600	-	-
Explanation: This program supports PLRS, which the Congress delayed until FY 83 for further RDT&E. Program will be reinstated when PLRS is procured.								
Budget Activity 3: Other Support Equipment								
Compactor, Hi-Speed Tamp Self Prop (CCE)	29	3,500	29	3,500	-	29 - 3,500	-	-
Explanation: This reduction will delay the procurement of the Hi-Speed Compactor. This item is being reduced in favor of the higher priority requirement. Reinstatement will be necessary in future fiscal years.								
TOTAL REPROGRAMING DECREASE						- 7,100		
NET CHANGE IN PROGRAM, OTHER PROCUREMENT, ARMY, 1982/1984						- 7,100		
TOTAL REPROGRAMING DECREASES						-20,900		

APPROVED (TYPEWRITTEN NAME AND TITLE)

Frank C. Carlucci
Deputy Secretary of Defense

DD, FORM 1415 - 1

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13 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 75, which are obsolete.

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Mr. ADDABBO. This is actually second reprogramming due to increased strength. Do you now feel that you have a handle on where you are going and how fast?

General DAVIS. Yes, Mr. Chairman. For fiscal year 1982, similar to the success that we have had in all of our military pay operations, we now feel at this time in the fiscal year we have a very accurate feel for where we are, particularly in the National Guard program.

Mr. ADDABBO. Are those trends continuing?

General DAVIS. Yes, sir. The latest information from the States indicates that our trend is toward more non-prior service accessions which gives us a younger force. We are also experiencing more people attending drills, schools and special training.

SOURCE OF FUNDS

Mr. ADDABBO. The reprogramming document proposed as a source of funds $9.9 million which was to be used to establish a second source for tank thermal sights for M60 series tanks. Yesterday we received a notification requesting to replace this source of funds with an alternative source of funds.

I would have been a little surprised and chagrined that you were not looking for a second source, and am happy that you are now again going to look for a second source and have found funds elsewhere.

General DAVIS. Yes, sir.

Mr. ADDABBO. I applaud you on it and we will probably approve the alternative source. I will insert the letter in the record at this point. Please answer the following question for the record.

[CLERK'S NOTE.—The letter and the questions submitted by Mr. Addabbo with the answers thereto follow:]

DEPARTMENT OF THE ARMY
OFFICE OF THE COMPTROLLER OF THE ARMY
WASHINGTON, D.C. 20310

4 AUG 1982

REPLY TO
ATTENTION OF

Honorable Jamie L. Whitten
Chairman
Committee on Appropriations
House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

The Army requests to replace resources offered for the essential Army National Guard Personnel reprograming action, FY 82-27PA. The proposed adjustments within the Procurement of Weapons and Tracked Combat Vehicles Appropriation, Army, 1982/1984 follow:

Resource withdrawal. Tank, Combat, FT 105MM Gun M60 Series (MOD) $9.9 Million.

Replacement resources.

a. Production Base Support (TCV-WTCV) - $7.6 Million.
Explanation: The reduction will delay the start of a three year modernization effort at the Red River Army Depot which is in support of the M113 and the Bradley Fighting Vehicle Systems for about eight months in favor of a higher priority requirement. Reinstatement will be necessary.

b. Squad Automatic Weapon (SAW), 5.56MM - $2.3 Million.
Explanation: Current favorable economic conditions permit contracting for the authorized number of Squad Automatic Weapons prior to the end of September 1982 with the revised program. A major adverse change in the economic situation will cause delay and a reduction in the number of weapons. A reinstatement would then be required in later years.

Your assistance in this matter is appreciated.

Sincerely,

Harold M. Davis, Jr.
HAROLD M. DAVIS, JR.
Brigadier General, GS
Director of Army Budget

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QUESTIONS

1. Does the fact that this source of funds was proposed indicated that the Army is leaning toward giving up on second sourcing in favor of sole source procurement?

2. The fact that you budgeted the $9.9 million in the first place would indicate that you had made an earlier decision to go second-source. What has caused you to have second thoughts about this?

3. When will you make a decision about which procurement strategy to follow?

4. On what factors will you decision be based? Will it include estimates from industry as to start up costs?

5. Will you please inform the Committee of your decision, and basis for it, before signing a contract?

ANSWERS

1. The Army is considering several acquisition strategies for the M60 Tank Thermal Sight (TTS), to include second sourcing and sole-source multiyear procurement. The Army's decision as to the strategy to be pursued will be based on the goal of obtaining the TTS system with lowest program risk and at the least cost to the Government. We are still in the process of determining which acquisition strategy to pursue.

2. A recent Army decision to convert the entire M60A1 fleet to M60A3 TTS configuration led the Project Manager to direct a study to determine the most cost-effective acquisition strategy (including second sourcing) for procuring the TTS in fiscal year 1983 and beyond. An analysis of the alternative strategies developed as a result of this study revealed that other strategies looked better than the second source acquisition strategy. Also, we recently received an unsolicited sole source proposal that is in the process of evaluation.

3. We are uncertain as to when a decision will be made on the procurement stragegy to be followed. We will inform the House Appropriations Committee when we arrive at a decision.

4. The PM, M60 studies on acquisition strategies that could be pursued in fiscal year 1983 and beyond include technical and schedule risk, cost, and a review of industry second source start-up cost experience and estimates as prime factors in arriving at decision recommendations.

5. Yes

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

THURSDAY, AUGUST 5, 1982.

FISCAL YEAR 1982 REPROGRAMMINGS

BRIG. GEN. HAROLD M. DAVIS, JR., DIRECTOR OF ARMY BUDGET, OFFICE OF THE COMPTROLLER OF THE ARMY

LT. COL. BRUCE J. HOWARD, WEAPONS SYSTEMS DIRECTORATE, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION

LT. COL. WILLIAM R. RITTENHOUSE, CHIEF, TANK TEAM, OFFICE OF THE DEPUTY CHIEF OF STAFF (RESEARCH, DEVELOPMENT, AND ACQUISITION), HEADQUARTERS, UNITED STATES ARMY

LT. COL. CHARLES B. ELLIOTT, DEPARTMENT OF THE ARMY SYSTEMS COORDINATOR, DEPUTY CHIEF OF STAFF (RESEARCH, DEVELOPMENT, AND ACQUISITION), HEADQUARTERS, UNITED STATES ARMY

MAJ. MICHAEL D. MIGGINS, PROGRAM BUDGET OFFICER FOR HIGH TECHNOLOGY AND TESTING DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS, HEADQUARTERS, UNITED STATES ARMY

M198 155MM TOWED HOWITZER

REPROGRAMMING 82-50PA

Mr. ADDABBO. The next reprogramming is 82-50PA Procurement of Weapons and Tracked Combat Vehicles, Army. The reprogramming proposes to use $1,877,000 in receipts from the sale of 12 M114 A-1 howitzers to Sudan for the procurement of four new M198 155mm howitzers. The principal witness is Brigadier General Hal Davis, Director of Army Budget. General Davis, we will insert your prepared statement in the record at this point along with the reprogramming document. You may summarize your statement and then we will proceed to questions.

[The information follows:]

STATEMENT OF BRIG. GEN. HAROLD M. DAVIS, DIRECTOR OF ARMY BUDGET

Mr. Chairman and members of the subcommittee: The reprograming request before you is necessitated by the sale of 12 Howitzers, Medium towed, 155mm M114A1 to the government of Sudan (FMS customer Order SU-B-UCM) and the need to replace the M114A2 Howitzers with the M198 Medium Towed 115mm Howitzer, thereby upgrading the Army inventory. The reprograming action is applicable to fiscal year 1982. Approval of this request will improve the readiness posture of the Army by permitting the replacement of the older M114A2 Medium Towed 115mm Howitzer with the more modern m198 medium 115mm Howitzer.

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Page 1 of 2 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE	DOD SERIAL NUMBER
Procurement of Weapons and Tracked Combat Vehicles, Army 1982/1984	FY 82-50 PA
COMPONENT SERIAL NUMBER	(Amounts in Thousands of Dollars)
FY82-19 PA	

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This action is submitted for prior approval since it proposes to increase a line item subject to authorization. It represents modernization of US Army procurement items resulting from a sale of items from inventory for which a later model will be procured. This proposal meets all the administrative and legal requirements of the Congress, and has not been previously denied. The increased amounts are not reflected in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASE: FY 1982 PROGRAM.								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY 1982/1984.								
Budget Activity 2: Weapons and Other Combat Vehicles								
Howitzer, Med Towed, 155mm, M198	200	72,100	200	72,100	+4	+1,877	204	73,977

Explanation: Sale from on-hand inventory of stock of 12 Howitzer, Medium, Towed, 155mm, M114A1 to Sudan creates a requirement to replace them with the improved M198 Howitzer, Med, Towed, 155mm. Delivery to the Army of the new M198 Howitzer will be integrated into the production schedule for the current program.

TOTAL REPROGRAMING INCREASE						+1,877		
REPROGRAMING DECREASE: FY 1982 PROGRAM								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY 1982/1984								
Reimbursable Program	-	490,700	-	490,700	-	-1,877	-	488,823

Explanation: Sale of 12, Howitzers, Medium, Towed, 155mm M114A1 to Sudan from inventory results in the need to replace them with the newer Howitzer, Medium Towed, 155mm, M198. Funds in the amount of $1,876,476 to cover new procurement have been obtained from the country of Sudan through the FMS trust fund as a pre-payment into the Procurement of Weapons and Tracked Combat Vehicles, Army account.

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Page 2 of 2 Pages

REPROGRAMING ACTION

APPROPRIATION ACCOUNT TITLE: Procurement of Weapons and Tracked Combat Vehicles, Army 1982/1984

DOD SERIAL NUMBER: FY 82-50 PA

COMPONENT SERIAL NUMBER: FY82-19 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
TOTAL REPROGRAMING DECREASE						-1,877		
NET CHANGE IN PROGRAM PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984						-		

APPROVED (Signature and Date)

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1415 - 1

UNCLASSIFIED

13 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 75, which are obsolete.

BEST DOCUMENT AVAILABLE

General DAVIS. Mr. Chairman, this reprogramming replaces older 155-millimeter howitzers sold to Sudan under foreign military sales with the more modern version. No additional funds are required, but it requests your approval and the committee's approval to reprogram $1.8 million from the reimbursable program to the direct program using the proceeds from foreign military sales.

This reprogramming requests approval to increase a line item subject to authorization for purchase of additional modern M198 155-millimeter howitzers. The net result is increased readiness as our inventory will then be replenished with an approved modern version of our main howitzer.

Mr. ADDABBO. The 12 howitzers sold to Sudan came from on-hand inventory stock. What specific units did these come from, and what was the impact on the readiness of the unit?

General DAVIS. The 12 M114 Howitzers were taken from depot stock at Letterkenny Arsenal. They were not taken from a unit and so had no impact on the readiness of a unit.

Mr. ADDABBO. We gave up 12 and we are only getting four back. Why is that?

General DAVIS. The M198 howitzer, a more modern version of the older M114 A1 howitzer, costs appreciably more, approximately $360,000 apiece.

Mr. ADDABBO. Will it give you greater firepower than what we are giving up?

General DAVIS. The M-198 gives us far greater capability than the M114 A1. As an artilleryman, I can attest to that, Mr. Chairman.

Mr. ADDABBO. Twelve to four, is that enough ratio? We don't feel that way. We on the committee feel that the Defense Department again is being asked to subsidize foreign military sales, which we feel is not proper. Someday we are going to be able to get a handle on stopping the State Department from using the Defense Department for their purposes.

Any further questions?

[No response.]

Mr. ADDABBO. The sale to Sudan involved the loss of 12 howitzers from our inventory, yet we are only able to procure four howitzers in return.

(a) Why is this drawdown of our inventory allowed to take place?

(b) Is this not an example of the Defense budget subsidizing the foreign aid program since all 12 howitzers will eventually have to be replaced with direct appropriations?

(c) When is it expected that the four howitzers in this reprograming will be delivered?

(d) When will the remaining eight be funded and delivered? Please respond for the record.

[The information follows:]

(a) The Army is allowing the sale of M114 Howitzers since all M114 Towed 155mm Howitzers are in the process of being replaced by the new, more capable M198 Towed 155mm Howitzers.

(b) The sale of the 12 M114 Howitzers is not considered to be an example of subsidizing the foreign aid program. The 12 M114 Howitzers were in depot stock at Letterkenny Arsenal, and there are no Army plans to reissue M114 Howitzers to either active army or reserve units. The sale of M114 Howitzers is therefore a means of supplementing appropriations required to purchase M198 Howitzers, with the net

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effect of reducing direct appropriations that will be required for completion of M198 fielding.

(c) The M198 Howitzers purchased with fiscal year 1982 funds are scheduled for delivery in fiscal year 1985. The M198 Howitzers to be purchased with funds obtained from sale of M114 Howitzers will be added to the fiscal year 1982 purchase and should be delivered no later than September 1985.

(d) As the Army continues to field the M198 Howitzer, in both active army and reserve units the M114 Howitzers that are taken out of service will be placed in depot stock as were the 12 M114's that were sold to Sudan. Thus, replacements for M114 Howitzers that are placed in depot stock are already fielded.FS6604

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M240 7.62MM ARMOR MACHINE GUN

REPROGRAMMING 82-57PA

Mr. ADDABBO. The next reprogramming is fiscal year 82-57 Procurement of Weapons and Tracked Combat Vehicles, Army. The reprogramming proposes to use $502,000 in receipts from the sale of 100 M219 machine guns to Pakistan for the procurement of 100 M240 armor machine guns. The principal witness is Brigadier General Hal Davis, Director of Army Budget. General Davis, we will insert your prepared statement in the record at this point along with the reprogramming document. You may summarize your statement, and then we will proceed to questions.

STATEMENT OF BRIG. GEN. HAROLD M. DAVIS, DIRECTOR OF ARMY BUDGET

Mr. Chairman, members of the subcommittee: I will discuss the request you have before you. This reprograming results from an FMS Case (Pakistan PK-B- VAQ) for 100 M219 7.62mm Machine Guns. These machine guns were diverted from Army inventory and must be replaced. Replacement with the modern M240 model is required as the M219 is no longer in production. This reprograming action is applicable for fiscal year 1982. This request must be approved by the Appropriations and Armed Services Committees of both Houses since the M240 is an Authorization item in the Weapons and Tracked Combat Vehicles, Army Appropriation. Approval of this request will increase the readiness posture of the Army by allowing the procurement of 100 replacement machine guns.

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Page 1 of 1 Pages

REPROGRAMING ACTION

Procurement of Weapons and Tracked Combat Vehicles, Army,1982/1984 — FY 82-57 PA

FY 82-37 PA

Line Item	Program Base Reflecting Previous Actions		Program Previously Approved by DSD		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This action is submitted for prior approval since it proposes to increase a line item subject to authorization. It represents modernization of US Army Procurement items resulting from the sale of items from inventory for which a later model will be procured. This proposal meets all the administrative and legal requirements of the Congress. This program has not been previously denied. The increased amounts are not reflected in the FY82 column of the FY83 President's Budget.

REPROGRAMING INCREASE: FY 1982 PROGRAM								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984								
Budget Activity 2: Weapons and Other Combat Vehicles								
Armor Machine Gun 7.62mm, M240 Roll	5,400	26,300	5,400	26,300	+100	+502	5,500	26,802

Explanation: Sale from on-hand inventory of 100 M219 machine guns to Pakistan created a requirement to replace them with the improved M240 machine gun since the M219 is no longer in production. Delivery to Army of the new machine guns will be integrated into the production schedule for the current program.

TOTAL REPROGRAMING INCREASE						+502		
REPROGRAMING DECREASE: FY 1982 PROGRAM								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984								
Reimbursable Program		490,700	-	423,595	-	-502	-	423,093

Explanation: Sale of 100 M219 machine guns to Pakistan from inventory results in the need to replace the machine guns with the newer model M240 as the M219 is no longer in production. Funds of $501,600 to cover new procurement have been collected from the country of Pakistan through the FMS trust fund as a prepayment into the procurement account.

TOTAL REPROGRAMING DECREASE						-502		
NET CHANGE IN PROGRAM						-		

APPROVED (Signature and Date)

23 JUL 1982 — Frank C. Carlucci, Deputy Secretary of Defense

DD, Form 1415 - 1

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Supersedes DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jun 75, which are obsolete.

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General DAVIS. Mr. Chairman, this reprogramming request approval to replace M-219 machineguns sold to Pakistan under foreign military sales with the modern M240 version. No additional funds are required, as we are requesting your approval to reprogram $502,000 from the reimbursable to the direct program using the proceeds from this foreign military sale.

It does request approval to increase a line item subject to authorization. Purchase of 100 additional M-240 machineguns would increase our readiness as our inventory is replenished with an improved machinegun.

Mr. ADDABBO. How soon will you get the replacement guns?

General DAVIS. The line is already open. I can provide that for the record, Mr. Chairman.

Mr. ADDABBO. Supply for the record also what units the 100 M-219s, they came from.

General DAVIS. Yes, sir.

[The information follows:]

General DAVIS. The replacement M-240 machineguns should be received by 1 July 1983. The 100 M219 machineguns sold to Pakistan were taken from depot stock.

Mr. ADDABBO. When were the 100 M219 guns removed from the inventory and delivered to Pakistan?

General DAVIS. Fifty M219 machineguns were shipped to Pakistan on 11 March 1982. The other fifty were shipped on 10 August 1982.

Mr. ADDABBO. Here we see a better ratio, one for one.

General DAVIS. Yes, sir, a much better ratio.

Mr. ADDABBO. I know. That is the ratio we should get? Any further questions?

Mr. EDWARDS. No.

Firing Port Weapon for the IFV

Reprogramming 82-58PA

Mr. Addabbo. The next reprogramming is 82-58PA, Procurement of Weapons and Tracked Combat Vehicles, Army. The reprogramming proposes to increase the fiscal year 1982 procurement of Firing Port Weapons for the Infantry Fighting Vehicle by 550. No additional funding is required. The principal witness is Brigadier General Hal Davis, Director of Army Budget. General Davis, we will insert your prepared statement along with the reprogramming document in the record at this point. You may summarize your statement, and then we will proceed to questions.

[The information follows:]

Statement of Brig. Gen. Harold M. Davis, Director of Army Budget

Mr. Chairman and members of the subcommittee: The purpose of this reprograming is to request approval to purchase 550 additional firing port weapons for the Infantry Fighting Vechicle (IFV) in fiscal year 1982 at no additional cost.

The additional 550 firing port weapons for the IFV are required because of an increase of 83 IFV's with a corresponding decrease in Cavalry Fighting Vehicles (CFV) in the heavy division (Division 86) structure. Six firing port weapons are required for each IFV for a total of 498. An additional 52 weapons are required for maintenance float. No additional funds are required for this increase as the Army has had two previous years of production. This has resulted in a decrease in unit cost.

This request must be approved by the Appropriations and Armed Services Committees of both Houses since the firing port weapon is an authorization item in the Weapons and Tracked Combat Vehicles, Army appropriation. Approval of this request will increase the readiness posture of the Army.

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Page 1 of 1 Pages

REPROGRAMING ACTION

Appropriation Account Title	DOD Serial Number
Procurement of Weapons and Tracked Combat Vehicles, Army: 1982/1984	FY 82-58 PA
Component Serial Number: FY82-33 PA	(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by SECDEF		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming proposal requires prior approval because it proposes to increase line items subject to authorization. This proposal meets all the administrative and legal requirements of Congress and is not reflected in the FY82 column of the FY83 President's Budget.

REPROGRAMING INCREASE, FY 1982 PROGRAM

PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984

Budget Activity 2: Weapons and Other Combat Vehicles

Firing Port Weapon - IFV	18,850	19,400	18,850	19,400	+550	-	19,400	19,400

Explanation: These additional weapons are required because of an increase of 83 Infantry Fighting Vehicles (IFV) with a corresponding decrease in Cavalry Fighting Vehicles (CFV) in the Heavy Division (Division 86) structure. Six Firing Port Weapons are required for each IFV for a total of 498. An additional 52 weapons are required for maintenance float. No Firing Port Weapons are required for the CFV. No additional funds are required for this increase as the Army has had two previous years of production with a resulting decrease in unit cost. Delivery to the Army of the additional Firing Port Weapons will be integrated into the production schedule for FY82.

TOTAL REPROGRAMING INCREASE	+550	-
TOTAL REPROGRAMING DECREASE	-	-
NET CHANGE IN PROGRAM, PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984		-

Approved (Signature and Date)
26 JUL 1982

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1415 - 1

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Classification

Replaces DD Form 1415, 1 Feb 63 & DD Form 1415-1, 1 Jan 75, which are obsolete.

BEST DOCUMENT AVAILABLE

General DAVIS. Mr. Chairman, this reprogramming requests approval to purchase an additional 550 firing port weapons. The Division 86 structure increases the Infantry Fighting Vehicle requirement by 83 with a corresponding decrease in our Cavalry Fighting Vehicle requirement.

Each Infantry Fighting Vehicle requires six firing port weapons, for a total of 498.

52 additional firing port weapons are required for maintenance float. No additional funds are required due to a unit cost decrease in the firing port weapon, and we can purchase an additional 550 within the current budget. However, the request does increase a line item subject to authorization and we are before your committee to request your approval.

Mr. ADDABBO. When was the change in the mix of IFVs to CFVs made.

Colonel KLAVER. Sir, the change was made within the last year. I don't know exactly what month, but it has been a recent decision.

Mr. ADDABBO. What was the basis for the decision?

Colonel KLAVER. We have changed the number of IFVs and CFVs by type of unit. For example, in the mechanized infantry division, we did have 41 infantry fighting vehicles. That quantity now is up to 54 and there have been corresponding adjustments not only in mechanized infantry battalions, but cavalry squadrons as well.

Mr. ADDABBO. Are any additional firing port weapons scheduled for procurement beyond 1982?

General DAVIS. No, Mr. Chairman.

Colonel KLAVER. May I answer that? This is the last year of procurement from Colt Industries. This will be a buy-out year, sir.

Mr. ADDABBO. Because you can buy these guns without additional funding, we imagine there are some cost savings.

Supply for the record your current estimate of the total funding required to procure the 19,400 weapons now in the program.

Colonel KLAVER. We will be glad to, Mr. Chairman. The firing port weapon costs about $1,000 apiece.

Mr. ADDABBO. There are apparently cost savings which allow the additional 550 guns bo be procured without additional funding. What is your current estimate of the total funding required to procure the 19,400 weapons now in your program?

General DAVIS. The current estimate is $19.4 million.

Mr. ADDABBO. Any further questions?

Mr. EDWARDS. Just one.

How about telling me about the firing port weapon? What kind of weapon is it?

Colonel KLAVER. Sir, it is a modified M-16 rifle. It has a shorter barrel on it so that it doesn't stick out the side of the infantry fighting vehicle like the M-16 would. It also fires from an open bolt as against the closed bolt M-16. That is for safety inside the vehicle so it won't go off. It is less likely to happen.

We have added a collapsible stock to it. We have also added a hand grip to it. Except for those changes, it is an M-16 rifle.

Mr. EDWARDS. What does an M-16 normally cost?

Colonel KLAVER. Sir, I do not have that information.

Mr. EDWARDS. Anybody with a ballpark figure?

Colonel ELLIOTT. Ballpark figure is approximately $500.

Mr. EDWARDS. You figure that the modifications call for another $500 per weapon? Didn't you just say it is about $1,000 per weapon?

Colonel KLAVER. Sir, this could be a function of quantity again. We are buying far fewer. The total buy is 24,500 as against a larger number of M-16s.

Mr. EDWARDS. How about giving us something for the record on how you break down that cost?

General DAVIS. We will do that, Mr. Edwards.

[The information follows:]

The breakdown costs (program unit) of the M231 Firing Port Weapon (FPW):

Hardware	$925
Eng, QA, data	79
Equip/start up	16
Testing	10
Total	1,030

Hardware costs of the Firing Port Weapon compared to an M16 are higher for several reasons. Operational requirements of the two guns are different. The M16 requirement is 15 rounds per minute, Firing Port weapon is 60 rounds per minute. M16 is closed bolt, Firing Port weapon is open bolt. Firing Port Weapon requires a ball port locking mechanism, the M16 has none. Because of the different operational requirements of the Firing Port Weapon, tighter tolerances during the manufacturing process is required and the finish of many parts needs to be better than the M16. Other causes are the low volume of production of the Firing Port Weapon, whereas the M16 has been at a high rate for a long period of time which amoritizes production tooling costs over millions of M16 guns.

Approximately one third of the parts of the Firing Port Weapon are the same as the M16, one third are similar (but require tighter tolerances and or better finishes) and one-third unique to the Firing Port Weapon.

BEST DOCUMENT AVAILABLE

M-1 TANK

REPROGRAMMING 82-60PA

Mr. ADDABBO. The next reprogramming is fiscal year 82-60, Procurement of Weapons and Tracked Combat Vehicles, Army. The reprogramming proposes to use $65,228,000 from the sale of 130 M48 series tanks sold to Pakistan, Thailand, Norway, and Taiwan for the procurement of 35 M-1 tanks. The principal witness is Brigadier General Hal Davis, Director of Army Budget. General Davis, we will insert your prepared statement in the record at this point, along with the reprogramming document. You may summarize your statement, and then we will proceed to questions.

STATEMENT BY BRIG. GEN. HAROLD M. DAVIS, DIRECTOR OF ARMY BUDGET

Mr. Chairman: The fiscal year 1982 reprogramming request before you today resulted from the sale of tank assets out of the U.S. inventory under the Foreign Military Sales Program. The $65.2 million to be received from the sale of 100 M48A5 tanks to Pakistan, five M48A5 tanks to Thailand, one M48A5 tank to Norway, and 24 M48A1 tanks to Taiwan will fund an additional 35 M1 Abrams tanks. Approval of this request will insure that the older tanks no longer in production are replaced by the most modern, agile, survivable, and combat capable tank available for our soldiers.

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Page 1 of 2 Pages

REPROGRAMMING ACTION

Procurement of Weapons and Tracked Combat Vehicles, Army, 1982/1984

FY 82-60 PA

FY 82-31 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DSAA		Reprogramming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This action is submitted for prior approval since it proposes to increase a line item subject to authorization and because the item being increased is known to be of special interest to the Congress. It represents modernization of US Army procurement items resulting from a sale of items from inventory for which a later model will be procured. This proposal meets all the administrative and legal requirements of the Congress, and the item for which reprograming is requested has not been previously denied. The increased amounts are not reflected in the FY 1982 column of the FY 1983 President's budget.

REPROGRAMING INCREASE: FY 1982 PROGRAM								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984								
Budget Activity 1: Tracked Combat Vehicles								
Tank, Combat, FT, 105mm Gun, M1	665	1,345,900	665	1,345,900	+35	+65,228	700	1,411,128

Explanation: Sale from on-hand inventory of 100 M48A5 tanks to Pakistan, 5 M48A5 tanks to Thailand, one M48A5 to Norway, and 24 M48A1 tanks to Taiwan creates the opportunity to replace older, more vulnerable tanks with the modern M1 Abrams tank. Delivery to the Army of the new M1 tank will be integrated into the production schedule.

TOTAL REPROGRAMING INCREASE						+65,228		
REPROGRAMING DECREASE: FY 1982 PROGRAM								
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984								
Reimburseable Program	-	490,700	-	488,823	-	-65,228	-	423,595

Explanation: Sale of 100 M48A5 tanks to Pakistan, 5 M48A5 tanks to Thailand, one M48A5 to Norway, and 24 M48A1 tanks to Taiwan creates the opportunity to replace older, more vulnerable tanks with the modern M1 Abrams tank. Funds in the amount of $65,227,500 to cover new procurement have been obtained from the countries of Pakistan, Thailand, Norway, and Taiwan through the FMS trust fund as a prepayment into the Procurement of Weapons and Tracked Combat Vehicles, Army account.

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Page 2 of 2 Pages

REPROGRAMING ACTION

Procurement of Weapons and Tracked Combat Vehicles, Army, 1982/1986

FY 82-60 PA

FY 82-31 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY DOD/OSD		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
TOTAL REPROGRAMING DECREASE						-65,228		
NET CHANGE IN PROGRAM						-		

Frank C. Carlucci
Deputy Secretary of Defense

DD, FORM 1415 - 1

UNCLASSIFIED

28 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & DA Form 1418-1, 1 Jan 71, which are obsolete.

BEST DOCUMENT AVAILABLE

General DAVIS. Mr. Chairman, this reprogramming request approval to replace M-48 tanks sold to several foreign customers under foreign military sales with the M-1 tank. This reprogramming requires no additional funds, as we are requesting your approval and that of the committee to reprogram $65.2 million from the reimbursable to the direct program using our proceeds from foreign military sales.

It does increase a line item subject to authorization, the M-1 tank by an additional 35 tanks, and increases our readiness as the inventory is replenished with a more modern improved version of the tank.

Mr. ADDABBO. It doesn't increase your inventory. It increases your capability.

General DAVIS. It increases our capability.

Mr. ADDABBO. You are giving up 130 tanks and all you are getting back is 35 tanks?

General DAVIS. Yes, Mr. Chairman, due to the higher unit cost of the M-1.

Mr. ADDABBO. Where are those 130 taken from?

General DAVIS. We will supply that for the record, Mr. Chairman.

[The information follows:]

Of the 130 tanks mentioned, 105 are from the National Guard Decrement Account, one is from the U.S. Army War Reserve Account, and 24 are M48A1 turrets only (the chassis are designated for the DIVAD Gun Program).

Mr. ADDABBO. When will you receive the replacement tanks?

General DAVIS. The replacement tanks would be included in the fiscal year 1982 funded delivery period.

Mr. ADDABBO. Do you know what it will cost to procure the other 95 tanks?

General DAVIS. You are referring to the difference between the 35 and the 130 sold.

Mr. ADDABBO. The 35 you are getting and the 130 that we are giving up?

General DAVIS. The current price of our M-1 tank is $1.8 million. That is the production price. The current price of our M-60 tank is $1.3 million.

Mr. DICKS. Is that driveaway cost? I thought it was $2.4 million.

General DAVIS. That cost, I haven't seen one that high, but that cost may include all of the R&D and all of the overhead cost.

Mr. DICKS. That is the driveaway cost.

Mr. ADDABBO. That is then year dollars?

Colonel RITTENHOUSE. The $2.4 million is Program acquisition unit cost expressed in fiscal year 1983 constant dollars. The current unit hardware cost is $1.8. The delivery period would be a part of the fiscal year 1982 funded delivery period as it now stands. Those tanks would probably be delivered in February 1984, which is the end of the 1982 funded delivery period.

Mr. ADDABBO. Any further questions?

Again I repeat myself. The State Department is having us subsidize foreign military sales.

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Mr. EDWARDS. I agree with you, but is it fair to say that in effect we are getting rid of some old outmoded tanks, and in fact turning that money into something worthwhile?

Mr. ADDABBO. I agree with the gentleman, but I don't like the ratios.

Mr. EDWARDS. You can't get as many M-1s as you can for 48s.

General DAVIS. That is right, Mr. Edwards.

Mr. EDWARDS. Are any of the 48s in the reserves or active forces?

General DAVIS. There are some in the reserves which are being replaced now by M-60s, and the—

Mr. EDWARDS. So you have not in fact been drawing down on the reserve or guard strength in tanks. You have been replacing those tanks?

General DAVIS. I would be fairly confident that these M-48s came not as a drawdown from reserves, but came because they were excess to our needs at that time.

Mr. EDWARDS. I don't want to disagree with you. I just doubt that.

We have seen so many tank sales where we have depleted what we believe on this committee to be an excessive commitment of our tanks to other countries when we are not filling up our own needs. I may be wrong in that, but that is my recollection over the last couple of years that we have looked at this.

You might want to put something in the record on that.

General DAVIS. Certainly, Mr. Edwards.

[The information follows:]

As new M1 and M60A3 TTS production tanks and M60A3 TTS conversion tanks come into the inventory, the less capable tanks in use by our active, guard, and reserve forces are placed in war reserve stocks.

The M48A5's sold (106) were a draw down of reserve accounts. One vehicle came from the War Reserve Account and 105 came from the National Guard Decrement Account. These 105 vehicles were in storage at Anniston Depot and were not withdrawn from active use by National Guard units. These were intended for use by the National Guard during mobilization. The 24 M48A1's were turrets only, not intended for use in the tank inventory. The chassis of these M48A1's have been kept at Anniston for use in the DIVAD gun program.

Mr. ADDABBO. Please answer the following questions for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Addabbo and the answers thereto follow:]

Question. Why are you proposing to procure M-1 tanks rather than the M60A3 tank?

A. How many M60A3 tnaks could be procured with the $65,228,000 involved in this reprogramming?

B. When would they be delivered?

C. We were told earlier this year that the M60 production line would close in November 1983, but that a prospective sale to Egypt might keep it going until July 1984. Did the sale to Egypt materialize?

D. When do you currently expect the M60A3 production line to close?

E. What monthly production rate is assumed in your forecasts?

Answer. The M1 is a more modern, survivable, and combat capable tank than the M60A3.

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A. 47 new production M60A3 TTS tanks or 210 M60A3 TTS conversion kits could be procured with these funds.

B. August-September 1984 timeframe for delivery of M60A3 TTS new production tanks or fiscal year 1984 timeframe for delivery of M60A3 conversion kits that would be applied in fiscal year 1985-86.

C. Yes, for 220 M60A3 tanks.

D. August 1984.

E. 30 new production M60A3 TTS tanks per month.

Question. Production and delivery problems have plagued the M-1 tank program. Production at the second plant in Detroit was to start early this and ramp up to 30 per month by January-February, 1983. What has been the monthly production at Detroit so far this year, and do you currently expect to achieve a 30 per month rate by January-February 1983?

A. What are the main problems that constrain tank deliveries at this point?

B. What is being done about them?

Answer. The Detroit Tank Plant came on line in March of this year as scheduled with two M1 tanks being delivered. One tank from Detroit was accepted in April, eleven in May, twelve in June, and fourteen in July. The Army still expects to reach a 30 a month rate at Detroit by early CY83.

A. While M1 tank production is not as smooth as ultimately desired, tank deliveries are not currently being impacted; the M1 production program is on contract schedule.

B. Even though deliveries are on schedule, the PM and the prime contractor are taking every possible step to improve the production process and continue the smooth production build-up.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

MK 19-3 40mm Grenade Launcher

Reprogramming 82-61PA

Mr. Addabbo. The next reprogramming is FY 82-61PA Procurement of Weapons and Tracked Combat Vehicles, Army. The reprogramming proposes to use $5.2 million to procure 190 MK 19-3 40mm Grenade Launchers for the 9th Infantry Division High Technology Test Bed for operational and organizational testing. The principal witness is Brigadier General Hal Davis, Director of Army Budget. General Davis, we will insert your prepared statement in the record at this point along with the reprogramming document.

[The information follows:]

Statement of Brig. Gen. Harold M. Davis, Director of Army Budget

Mr. Chairman and members of the subcommittee: The purpose of this briefing is to request approval to transfer $5.2 million within Weapons and Tracked Combat Vehicles, Army appropriation for purchase of 190 automatic 40mm Grenade Launchers.

The automatic 40mm Grenade Launchers are for use in the developing High Technology Light Division. This division will not have tanks. Therefore it will need a light armor killing capability so that its TOW systems will not have to be diverted to that mission. The 40mm Grenade Launchers will provide the light armor killing capability. The Army proposes to use $1.9 million in fiscal year 1982 funds from the 81mm Mortar program and $3.3 million in fiscal year 1982 funds from spares and repair parts program. The 81mm Mortar type classification is scheduled for 2d quarter fiscal year 1983. Therefore fiscal year 1982 procurement funding is not required at this time and will be reinstated later.

The $3.3 million from spares and repair parts (TCV-WTCV) will have minimal impact as the Automatic Standard Initial Provising Program at the U.S. Army Armament Command erroneously considered reparable parts on nonreparable basis resulting in an overstatement of the requirement for items that are required to be returned for extraction of precious metals. This reduction to the spares and repair parts line represents an adjustment to reflect actual fiscal year 1982 Activity 1 requirement.

The 190 weapons will support operational and organizational testing to be started in late fiscal year 1984. An additional 761 weapons will be needed to support the High Technology Light Division by the end of fiscal year 1985. Funds to purchase the additional 761 weapons could not be used prior to fiscal year 1983 but will be needed in fiscal year 1983. Therefore we will request reprograming to meet this need next year.

This request must be approved by the Appropriations and Armed Services Committees of both houses since the MK 19-3 Grenade Launcher is an authorization item in the Weapons and Tracked Combat Vehicles, Army appropriation. Approval of the request will increase the readiness posture of the Army.

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Page 1 of 2 Pages

REPROGRAMMING ACTION

Procurement of Weapons and Tracked Combat Vehicles, Army, 1982/1984

DoD Serial Number: FY 82-61 PA

FY 82-40 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DoD/OSD		Reprogramming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming proposal requires prior approval because it proposes to establish a line item subject to authorization. This increase is for a higher priority item, based on unforeseen military requirements, than those for which originally appropriated, and has not been previously denied by the Congress. This proposal meets all the administrative and legal requirements of Congress and is not reflected in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASE, FY 1982 PROGRAM

PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984

Budget Activity 2: Weapons and Other Combat Vehicles

Grenade Launcher, Auto, 40mm, MK19-3

-	-	-	-	+190	+5,200	190	5,200

Explanation: A new "high technology light division" is being developed as a light-weight, strategically deployable force with increased firepower compared to current Infantry divisions. The 9th Infantry Division will become the prototype of this new division by the end of FY 1985. Two other infantry divisions will be converted by the end of FY 1988. The MK19-3 will provide a light armor and anti-personnel killing capability to an effective range of 1600 meters for the high technology light divisions. This is important because the new divisions will not have tanks. Therefore, if the MK19-3 is not provided, TOW Systems will need to be diverted from their tank killing mission to the light armor killing role. This will degrade the divisions' tank killing capabilities. The requested FY 1982 reprograming is necessary to provide 190 weapons to the 9th Infantry Division High Technology Test Bed in FY 1984 so that operational and organizational testing can be conducted to validate employment concepts prior to the conversion of the 9th Infantry Division to the new organization in FY 1985. These funds were not requested in the FY 1982 President's Budget submission because the requirement was not approved until May 1982.

TOTAL REPROGRAMING INCREASE +5,200

REPROGRAMING DECREASE, FY 1982 PROGRAM

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Page 2 of 2 Pages

REPROGRAMING ACTION

Appropriation Account Title	DOD Serial Number
Procurement of Weapons and Tracked Combat Vehicles, Army, 1982/1984	FY 82-61 PA
Component Serial Number: FY 82-40 PA	(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DOD		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY, 1982/1984								
Budget Activity 1: Tracked Combat Vehicles								
Spares and Repair Parts - (TCV-WTCV)	XX	276,000	XX	276,000	XX	-3,300	-	272,700
Explanation: Decrease will have minimal impact as the planned requirements developed by the Automatic Standard Initial Provisioning Program at the US Army Armament Command did not materialize as projected in the FY 1982 appropriation. This reduction represents an adjustment to reflect actual FY 1982 requirements.								
Budget Activity 2: Weapons and Other Combat Vehicles								
Mortar 81mm, XM252	60	1,900	60	1,900	-60	-1,900	-	-
Explanation: Item will not be type classified until the second quarter of FY 1983. Therefore FY 1982 procurement funding is not required. These items will be rescheduled for procurement in future years.								
TOTAL REPROGRAMING DECREASE						-5,200		
NET CHANGE IN PROGRAM, PROCUREMENT OF WEAPONS AND TRACKED COMBAT VEHICLES, ARMY 1982/1984						-0-		

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1415 - 1

28 JUL 1982

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Replaces DD Form 1415, 1 Feb 63 & DD Form 1416-1, 1 Jun 75, which are obsolete.

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General Davis.

General DAVIS. Yes, sir. This reprogramming requests approval to purchase those 190 grenade launchers that you mentioned for $5.2 million. It is a new start in fiscal year 1982 of a line item subject to authorization.

It fulfills a light armor killing capability for the division, so that the TOW systems will not have to be diverted for that purpose.

The high technology light division is organized conceptually without tanks, and the MK 19-3 system would be purchased from the Navy. It is a Navy system.

We can obligate the funds this year and in fact we have informally notified the Navy and the Navy is waiting for our transfer of funds.

Mr. ADDABBO. What will it replace?

General DAVIS. It is primarily designed to provide the division a very light mobile, armor-killing capability, so that it really is not replacing anything in the high technology light division. In effect, it is providing an additional capability.

Mr. ADDABBO. Are the 190 systems proposed in this reprogramming expected to fulfill the total requirement for the 9th Division?

General DAVIS. They are not in lieu of the TOW. The TOW is primarily for the tank-killing capability.

Mr. ADDABBO. Will this be the total requirement for the 9th Division?

General DAVIS. They will also have the TOW.

Mr. ADDABBO. Total.

Colonel ELLIOTT. Sir, the total requirement will be for 951 weapons.

Mr. ADDABBO. Will a similar number be required for each of the other infantry divisions or is this the only unit that is going to have it?

General DAVIS. That is not planned at the present time, Mr. Chairman. This is a test mode.

Mr. ADDABBO. Do we have any inventory at the present time?

General DAVIS. No, Mr. Chairman.

Mr. ADDABBO. When was the MK-19 type classified?

General DAVIS. The MK 19-3 was approved for Service use by the Navy in October 1981. It is scheduled for Army Limited Procurement Type Classification in March 1983.

Mr. ADDABBO. What will happen if the testing program concludes that the MK-19 is an unsuitable weapon?

General DAVIS. This is unlikely. Based upon limited field exercises conducted with old model MK19-1, the 9th Infantry Division found the system to have great potential. Also, the MK19-3 has been approved for Service use by the Navy.

If, however, the MK19-3 were found to be unsuitable there might be several options that we could follow, such as applying modifications to the system to make it suitable or using the weapons to meet other Army requirements for which they would be suitable.

Mr. ADDABBO. Since this is a test program, why are we not using current assets borrowed from other units? I understand the Marine Corps has some.

Major MIGGINS. Sir, if I could, we have some Mod 1 MK 19s that we have borrowed from the Navy for testing. We intend to actually field two battalions in the coming fiscal year.

Those weapons are going to be used in those two battalions. They will be the first light high tech battalions that will go into that mode. We intend to take them down to our national training center and continue with our validations and testing there.

We feel it is imperative that we have those weapons for that.

Mr. ADDABBO. General, why would this not be funded in the Research, Development, Test and Evaluation since the purpose of the funds is for operational and organization testing?

Colonel ELLIOTT. Sir, Lt. Colonel Elliott.

A clarification first. There are two versions of the MK-19 that are discussed. One is the Mod 1. This is a Navy system developed by the Navy in Vietnam. They have since developed a Mod 3, and it was approved for service use by the Navy in October of last year.

As for the modification 3 system, there are a few systems that will be tested later this year. A total of eight that are being fabricated at this time will be tested by the Navy and the Marine Corps.

We need to be able to observe their testing, so that we can glean from their testing information to assist us in evaluating our requirement.

This is separate testing from the O&O type testing, operational testing that Major Miggins has just described.

Mr. ADDABBO. Colonel, do you know whether the Marine Corps is testing under this Research Development Test and Evaluation appropriation or under similar appropriations you requested?

Colonel ELLIOTT. Sir, I do not know what appropriation they are testing under.

Mr. ADDABBO. General, the Marine Corps budgeted procurement of the 792 MK-19s for $20.6 million or a unit cost of $26,000. Your cost is at $27.3. Why would it be almost $1,000 higher?

Colonel ELLIOTT. Sir, this is program cost which would be required in order to set up our office to actually procure the weapons through the Navy and distribute the weapons.

SOURCE OF FUNDS

Mr. ADDABBO. Included as a source to funds is the $1.9 million appropriated last year for the XM252 81mm mortar. The funds are not needed because the system will not be type classified until the second quarter of fiscal year 1983. What caused the delay in type classification?

Colonel ELLIOTT. Blast overpressure problems and wet propellant performance problems resulted in the ammunition being declared unsafe in December 1979. Type classification delay was due to time required to develop solution to these problems. Solutions have been develoed and are presently being evaluated as part of the Development Test II and Operational Test II.

Mr. ADDABBO. What are the results of recent testing of that mortar?

Colonel ELLIOTT. The results of the recent testing? For the record, the development test 2 of this mortar system began in April of 1982 and is scheduled to end in October of 1982. The operational

test of the system started in July, and is scheduled to end in October 1982.

To date there have been no significant problems discovered with the system.

Mr. ADDABBO. It has been meeting its current milestones?

Colonel ELLIOTT. Yes, sir. It is meeting its current milestones.

Mr. ADDABBO. Any further questions?

Mr. DICKS. Yes, I have a question.

Mr. ADDABBO. The gentleman from Washington.

Mr. DICKS. What would happen if you didn't get the reprogramming money? Can you chracterize that?

General DAVIS. It would delay the Army's ability to provide these weapons to the 9th Infantry Division high technology light division significantly, probably until sometime in late fiscal year 1983. This would seriously delay its ability to test these weapons within the division, and to field the high technology light division by fiscal year 1985.

Mr. DICKS. Isn't it true that General Meyer has made a high priority of trying to move ahead with the high technology light division?

General DAVIS. That is true, Mr. Dicks.

Mr. DICKS. So this is an important reprogramming.

General DAVIS. This is an important reprogramming in the eyes of the Army.

Mr. DICKS. Thank you.

VIPER

REPROGRAMMING FISCAL YEAR 82-51PA

Mr. ADDABBO. The Committee will now consider Army reprogramming action 82-51PA, which requests authority to realign $10,000,000 within the Research, Development, Test and Evaluation account. The stated purpose is to implement fiscal year 1982 Congressional guidance concerning testing of alternatives to the VIPER.

The Army witness appearing in support of this request is Brigadier General Harold M. Davis, Jr., Director of the Army Budget. The reprogramming document and statement will be placed in the record at this point.

[The information follows:]

STATEMENT BY BRIG. GEN. HAROLD M. DAVIS, DIRECTOR OF ARMY BUDGET

Mr. Chairman and members of the subcommittee: The reprogramming request before you reprograms $10.0 million into the fiscal year 1982 research development. Test and evaluation, Army appropriation for Improved Light Antitank Weapon (VIPER). The program offset is being provided from the Procurement of Ammunition Army (PAA) account. Your prior approval is required. Since the reprograming action proposes a transfer between appropriations.

A $10.0 million program is required for Improved Light Antitank Weapon (VIPER) to implement congressional direction to test all available foreign and domestic Light Antiarmor System. This transfer of ammunition funds to support the test effort also implements the guidance of the appropriations conference committees to carry out the test program withing available funds.

The $10.0 million is the estimate cost to cover both Army and Marine Corps phase II testing. The funds will allow acquisition and testing of offered candidate weapons. The funding is requested in fiscal year 1982 so that the testing can be completed by July 31, 1983 in accordance with congressional direction.

The source of funds proposed to support the VIPER alternative test effort is the Army procurement program for practice and inert training mines. Procurement of the mines has been delayed pending results of a study on all requirements. The study is not expected to be completed in time to allow procurement in fiscal year 1982. If procurement is indeed required.

This reprograming must be approved by the House and Senate Committees on Armed Services and Appropriations. Your approval is essential to the Light Antiarmor Weapon alternative evaluation.

This concludes my statement. We are ready for your questions.

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Page 1 of 2 Pages

REPROGRAMING ACTION

Research, Development, Test and Evaluation, Army, 1982/1983 (Including Transfer of Funds)

DD 1414 SERIAL NUMBER: FY 82-51 PA

COMPONENT SERIAL NUMBER: FY 82-32 PA

(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

PRIOR APPROVAL ACTION

This reprograming requires the prior approval of the committees because it proposes a transfer between appropriations pursuant to Section 733, P.L. 97-114, Department of Defense Appropriations Act, 1982. Approval of a new program of over $2 million is requested. This proposal meets all the administrative and legal requirements of the Congress. The new program has a higher priority, based on unforeseen military requirements, than that for which funds were originally appropriated, and the programs decreased are not planned for reinstatement. This program has not previously been denied by Congress. This action is not reflected in the FY 1982 column of the FY 1983 President's Budget.

REPROGRAMING INCREASE, FY 1982 PROGRAM

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, ARMY, 1982/1983

BUDGET ACTIVITY 4, TACTICAL PROGRAMS

Improved Light Antitank Weapon (VIPER)	XX	0	XX	0		+10,000	XX	10,000

Explanation: This new program is required to implement FY 1982 Congressional direction. The Appropriations Committees approved the use of FY 1981 and FY 1982 Procurement of Ammunition, Army funds for production of the VIPER antitank round, with the comment that this approval should not be construed as approval of VIPER in its present configuration beyond the end of FY 1983. The Committees further directed the Army to commence testing all available light antiarmor systems, foreign and domestic, beginning within 90 days of contractor notification of availability and expression of desire to test. Additionally, the Appropriations Conference Committee expanded congressional direction by stating, "This testing program is to be carried out within available funds. The testing program shall address the needs of all services and the Office of the Secretary of Defense shall be involved in the evaluation."

The requested $10.0 million is required to cover costs of both Army and Marine Corps Phase II test efforts. These funds will allow entering into contract with interested offerors who meet essential Army/Marine Corps minimum technical requirements of weight, length, penetration, time of flight, and accuracy, along with reasonable price. The requested funding is from Army sources; therefore, eventual reimbursement will be required from the Marine Corps.

TOTAL REPROGRAMING INCREASE, RDT&E, ARMY, 82/83	+10,000
NET CHANGE IN PROGRAM, RDT&E, ARMY, 82/83	+10,000

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Page 2 of 2 Pages

REPROGRAMMING ACTION

Research, Development, Test and Evaluation Army, 1982/1983 (Including Transfer of Funds)

FY 82-51 PA

FY 82-32 PA

(Amounts in Thousands of Dollars)

Line Item	Program Base Reflecting Congressional Action		Program Previously Approved by DSD		Reprogramming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
		PRIOR APPROVAL ACTION						
REPROGRAMING DECREASES, FY 1982 PROGRAM								
PROCUREMENT OF AMMUNITION, ARMY, 1982/1984								
BUDGET ACTIVITY I: AMMUNITION								
Mines, Practice and Inert, All Types	227K	14,000	227K	14,000	-227K	-10,000	-	4,000

Explanation: Funding for these mines was originally identified to support Army training needs. Subsequent to identification of funding, the Army has entered into a study on all mine requirements. The study evaluation is currently addressing possible reclassification of these mines from ammunition to Training Devices/Aids. Therefore, it is premature to expend these funds at this time, with final study results pending. The balance of funds will be reprogramed to other ammunition items under delegated reprograming authority.

TOTAL REPROGRAMING DECREASE, PA, A, 82/84						-10,000		
NET CHANGE IN PROGRAM, PA, A,82/84						-10,000		

Frank C. Carlucci
Deputy Secretary of Defense

DD, Form 1415 - 1

UNCLASSIFIED

8 JUL 1982

Replaces DD Form 1415, 1 Feb 63 & 15 Form 1415-1, 1 Jan 73, which are obsolete.

BEST DOCUMENT AVAILABLE

Mr. ADDABBO. The stated purpose is to implement fiscal year 1982 congressional guidance concerning testing of alternatives to the Viper.

General DAVIS. Yes, Mr. Chairman. This request is for $10 million to implement that congressionally directed test of competitive systems.

It is requested for fiscal year 1982 in order that we may complete our testing by 31 July 1983 in accordance with direction of the Congress. It will be offset with procurement of ammunition, and the offset is available now due to the delay in the procurement of practice and inert training mines.

Mr. ADDABBO. What alternative weapons are being tested?

General DAVIS. Mr. Chairman, I would ask Major Simonich to address your question.

Major SIMONICH. The alternative weapons we expect to see will be the Swedish AT-4, the Norwegian M-72750, the Ambrust, possibly the Apilas. And the LAW 80 from the United Kingdom.

Mr. ADDABBO. It seems we have heard of those weapons before. By direction of the Congress, all testing was supposed to be completed on or before July 31, 1983. When will testing be started, and do you expect it to be completed by July of 1983?

Major SIMONICH. Sir, we have had a delay in issuing the RFP that would ask for proposals for tests from these manufacturers, so we would expect to start the test approximately in the late September time frame.

The Army would be available to test at that time, and we would test through the July 1983 time frame.

These tests would be screening tests of 70 rounds, and they would let us know if there was a viable candidate or alternative to Viper.

If there is no viable alternative to Viper, then the testing will be complete by that date. If there is a viable candidate in terms of cost and effectiveness, then the army will take that system into a DTOT. The DTOT would be expected to start up to a year after that date to allow contractors the adequate lead time to provide the bullet round for the DTOT, and put us in a position to make a procurement decision in March of 1985 at the latest, March of 1984 or earlier than March of 1985 if rounds are available from contractors in a lesser time of the year.

Mr. ADDABBO. This program was funded with some reluctance and some concern last year because of the high cost of the weapon vis-a-vis other weapons which you have just mentioned as possible alternatives. We now will see a lapse of two years before the services have a viable weapon, either the Viper or another weapon. In looking at the record, I see the appropriations conference on December 5, 1982 set forth this direction on testing against other available systems, but we didn't get this reprogramming request until July 8th, seven months later. If there is a need for this weapon, why do we see this constant delay?

General DAVIS. Major Simonich?

Major SIMONICH. Yes, sir. Initially the test was going to be a Consumer Reports type test, where we would get these rounds, take a look at them, and verify contractor's claims. There was an interpretation then of the congressional language that said we ought to

be in a position to make a procurement decision on an alternative to Viper by the fiscal 1984 buy.

This forced the Army then to plan for a full up development operational test, and when we tried to do that within the time frame allotted, we found that we eliminated many of the viable competitors because they didn't have the time to provide the actual round for test, so if we had done it that way, we felt we would have thwarted the intent of Congress because we would have restricted the competition severely.

In addition, because of the competitive aspects of the evaluation, we have been very careful in developing an acquisition strategy where a fair and equitable evaluation of all systems can be made.

All of that has taken some time, and has caused some of the delays in the program.

General DAVIS. It is also a joint Army/Marine Corps evaluation, which has caused some minor delays in agreement upon the specifications for what the ultimate round would be.

Mr. ADDABBO. I can appreciate that, but if you need additional money to do the tests, why was there seven months delay? You may expand for the record. Also provide the testing schedule.

General DAVIS. I will provide that.

[The information follows:]

It has taken nearly seven months to process this action due to the need to define the Army program; incorporate and attempt to harmonize USMC requirements; establish the ability to make a fiscal year 1984 procurement decision; resolve a legal conflict involving the funding of the Raufoss M72-750 unsolicited proposal; development evaluation criteria and an acquisition strategy; and determine the estimate of funding requirements. These actions took approximately six months; an additional month was consumed for administrative processing of the reprograming request within the Department of Defense.

The time required to accomplish the above may be considered excessive; however, issues had to be resolved on the weight spectrum for the LAW alternatives, extent of the testing program consistent with affordability, equitable treatment of all competitors, criteria for testing, and establishment of the relationship between the test effort and follow-on procurement actions.

Mr. ADDABBO. Provide for the record a schedule of events for this testing program.

[The information follows:]

Schedule follows:
Release RFP for 70 rd screening test—1 September 82.
Last date systems accepted for screening test—1 April 83.
Screening test completed—31 July 83.
Joint IPR—mid-Sept. 83.
Report to Congress on results of evaluation—30 Sept. 83.

Mr. ADDABBO. Any further questions?

Mr. EDWARDS. No thank you.

BEST DOCUMENT AVAILABLE

HIGH TECHNOLOGY LIGHT DIVISION

REPROGRAMMING FISCAL YEAR 82-53N

Mr. ADDABBO. The Committee will now consider Army reprogramming action 82-53N, which requests authority to realign $15,150,000 within the Research, Development, Test and Evaluation account.

The Army witness appearing in support of this request is Brigadier General Harold M. Davis, Jr., Director of the Army Budget. The reprogramming document and statement will be placed in the record at this point.

[The information follows:]

STATEMENT BY BRIG. GEN. HAROLD M. DAVIS, DIRECTOR OF ARMY BUDGET

Mr. Chairman and members of the subcommittee: The purpose of this briefing is to request approval of reprogramming RDTE funds from the COBRA/TOW and Chaparral programs to the program developing equipment for the High Technology Light Division (HTLD). The HTLD TDTE effort consists of development and modification of some of the equipment required to field to prototype HTLD in fiscal year 1985. The amount of this action is $15.15 million, $12.15 million for COBRA/TOW and $3.0 million from Chaparral.

This nation's initial response to contigency land threats continues to be rapid deployment of light forces, in many areas of the world, these light forces could be defeated because of the dramatic increase in combat power of potential adversaries. The Amry has initiated an ambitious, accelerated, and compressed program to substantially increase the combat power, effectiveness, and strategic deployability of the infantry division. The Army is also working closely with the U.S. Air Force and the U.S. Marine Corps on this effort. Thus far the effort has resulted in a new infantry division design, development of improved tactics and doctrine; and initial validation of light force materiel needs. This conceptual testing and validation effort is accomplished by the High Technology Test Bed associated with the 9th Infantry Division at Fort Lewis, WA. The new doctrine and operational concepts emphasize maneuver and the infusion of high technology as a combat multiplier, While decreasing the size and weight of equipment for better air transportability.

Eight specific components require fiscal year 1983 RDTE funding to support early HTLD fielding as follows:

Develop and test a lightweight, towed version of the Chaparral Air Defense System, transportable on the Black Hawk helicopter, accelerated development of a universal mine dispensing system, capable of dispensing more mines in both air and ground modes than current systems; develop and test a lightweight, helicopter transportable 40mm gun (Divad derivative) capable of being mounted on a truck or trailer; test and evaluate modifications to heavy mortars: develop and test heavy mortar "smart" antiarmor munitions; accelerate development of modular pack mine system; begin RDTE work on adapting commerical deception devices; evaluate Navy developed MK 19 40mm machinegun.

This reprograming action is one of the extraordinary steps being taken by the Army to reduce the acquisition cycle, in ligh of the urgency of this program. The objective is to field a prototype HTLD in fiscal year 1985, followed by the transition of two more divisions to the HTLD configuration by fiscal year 1988. The reductions to the COBRA/TOW and Chaparral programs will have no impact as the programs can use fiscal year 1983 funds in lieu of fiscal year 1982 funds as a result of program revisions. If reprograming is not approved, the Army will not be able to field the critically needed HTLD by fiscal year 1985.

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Page 1 of 2 Pages

REPROGRAMING ACTION

APPROPRIATION/ACCOUNT TITLE	DOD SERIAL NUMBER
RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY, 82/83	FY 82-53 N

COMPONENT SERIAL NUMBER	(Amounts in Thousands of Dollars)
FY 82-34 N	

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i

NOTIFICATION ACTION

This action provides notification of Army's intent to reprogram $15.15 million within the RDT&E,A appropriation to support development of equipment required to field the High Technology Light Division (HTLD) prototype by FY 1985. This action meets all the administrative and legal requirements of the Congress, and provides funding for higher priority items, based on unforeseen military requirements, than those items for which funds were originally appropriated. The items have not been previously denied by Congress, and are not included in the FY 1982 column of the FY 1983 President's budget. Additional reprograming is required and will be submitted for FY 1983 HTLD requirements.

REPROGRAMING INCREASE:

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY 1982/1983

FY 1982 PROGRAM

BUDGET ACTIVITY 4, TACTICAL PROGRAMS

1. High Technology Light Division (HTLD)						15,150		15,150

Explanation: This action requests the approval of the Congressional Committees to provide $15.15 million to the High Technology Light Division program for 1982 Research, Development, Test and Evaluation (RDT&E) activity. The HTLD RDT&E effort consists of development and modification of some of the equipment required to field the prototype HTLD in FY 1985.

TOTAL REPROGRAMING INCREASE						+15,150		

REPROGRAMING DECREASES:

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY 1982/1983

FY 1982 PROGRAM

BUDGET ACTIVITY 4, TACTICAL PROGRAMS

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Page 2 of 2 Pages

REPROGRAMING ACTION

APPROPRIATION/BUDGET TITLE	DOD SERIAL NUMBER
RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY, 82/83	FY 82-53 N
COMPONENT SERIAL NUMBER: FY 82-34 N	(Amounts in Thousands of Dollars)

LINE ITEM	PROGRAM BASE REFLECTING CONGRESSIONAL ACTION		PROGRAM PREVIOUSLY APPROVED BY SEC DEF		REPROGRAMING ACTION		REVISED PROGRAM	
	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
a	b	c	d	e	f	g	h	i
		NOTIFICATION ACTION						
2. COBRA/TOW		19,616		19,616		-12,150		7,466

Explanation: This reduction will have no impact. The program is being delayed in order to conduct a technical study. Execution of the revised COBRA/TOW program, based on the study results, will begin in FY 1983.

3. CHAPARRAL		19,616		19,616		-3,000		16,616

Explanation: The reduction will have no significant impact in FY 1982. Additional funding required to complete the CHAPARRAL program will be programed in the FY 1985 budget cycle.

TOTAL REPROGRAMING DECREASES						-15,150		

APPROVED (Signature and Date)

Frank C. Carlucci
Deputy Secretary of Defense

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General DAVIS. Mr. Chairman, this reprogramming is for the development and modification of equipment needed to field the high technology light division prototype by 1985. The Offsets of $12.2 million from the Cobra TOW and $3 million from the Chaparral come from within the RDT&E appropriation.

There is no significant impact to the Army as a result of these offsets due to program revisions, and the specific components to be modified as a result of this reprogramming would include the Chaparral, a universal mine dispenser, 40 mm gun, heavy mortar, smart heavy mortar anti-armor munitions, modular mines system, deception devices, and a 40 mm. machinegun.

Mr. Chairman, we are open for your questions.

NEW PROGRAMS

Mr. ADDABBO. It appears that in this reprogramming the Army proposes both to start new programs and to add funds to existing programs. Is that correct, General?

General DAVIS. That is correct, Mr. Chairman.

Mr. ADDABBO. Does starting several new programs by funding all of them in a single program element comply with standard procedures?

General DAVIS. It probably does not. We are using the high technology light division as a test vehicle. There have been some modifications in our procedures in order to give complete visibility to the committee, and also within the army, to what we are putting into the high technology light division, rather than keep separate elements in other appropriations or other programs.

Mr. ADDABBO. Does funding additions to existing programs by means of the proposed new program element mean that perhaps the total cost of those existing programs will no longer be readily apparent?

General DAVIS. That we will try to avoid, Mr. Chairman. In fact, you can have my assurances that we will keep total costs of any program visible to the committee and to the service.

Mr. DICKS. Please answer the following questions for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Dicks and the answers thereto follow:]

Question. This reprograming element proposes to provide fiscal year 1982 funds for the new program element. The fiscal year 1983 budget does not include a request for this program element. How will the fiscal year 1983 funds be provided? Fiscal year 1984 funds?

General DAVIS. As I had indicated before, the HTTB is one of the programs which the Army is accelerating in an effort to dramatically reduce the acquisition cycle. Since testing began a little over a year ago, it was not possible to impact the fiscal year 1983 budget preparation. In order to keep the momentum going toward a 1985 fielding of the HTLD it will be necessary to reprogram 1983 funds into this program element. We are currently working to insure that the fiscal year 1984 budget is properly funded when it is submitted to you.

Question. How much funding is expected in fiscal year 1983 and fiscal year 1984?

General DAVIS. At this time we estimate $100M to be required in each year.

Question. You state that "if reprograming is not approved, the Army will not be able to field the critically needed HTLD (high technology light division) by 1985." Presumably then, each of the eight projects listed in your statement will be able to be fielded by fiscal year 1985.

General DAVIS. It is the Army's intent to provide the division as much capability as possible by 1985. This may mean that prototypes used in the test phase if selected for use by the HTLD will be used until production articles are available. As currently scheduled, three important systems may not be available, the Light Air Defense System (LADS), the Modular Pack Mine System (MOPMS) and the aerial delivered universal mine system (VOLCANO). These systems are very important and should be available in fiscal year 1986 and fiscal year 1987. Without the fiscal year 1982 reprograming action they would be further delayed.

[CLERK'S NOTE. End of questions submitted by Mr. Dicks.]

"SMART" MORTAR ROUND

Mr. ADDABBO. One project is to develop and test heavy mortar so-called "smart" antiarmor munitions. Which mortar is that specifically?

General DAVIS. 4.2 inch mortar, sir.

Mr. ADDABBO. What kind of smart guidance do you plan to use specifically?

Colonel MATSON. Not all of the alternatives have been spelled out, but I am certain at this time the first consideration would be given to IRR technology.

Mr. ADDABBO. What is the Army's experience in the time required to develop and test "smart" ammunition?

General DAVIS. Not very good, Mr. Chairman.

Mr. ADDABBO. Does the Army plan to finish this new program by 1985?

General DAVIS. I would not want to bet on that, to be perfectly honest with you, Mr. Chairman. It is just a very difficult technology.

Mr. ADDABBO. What is the projected total development cost?

Colonel ELLIOTT. Sir, I am not directly related to this program, but I am close enough to it to give you this much information. It will not and is not planned to be completed by 1985. This would be a follow-on which would enhance the capability in the late 1980s and early 1990s.

Mr. ADDABBO. General, you stated, and I quote from your statement, "If reprogramming is not approved, the Army will not be able to field the critically needed high technology light division by fiscal year 1985." We would then have to presume that the eight projects listed in your statement would be fielded by 1985. There seems to be some question on that.

General DAVIS. Yes, Mr. Chairman. I will try to clarify that statement. Obviously not all the things we are testing are ever going to be adopted, nor are they going to impact equally on the Army's ability to field the high technology light division by 1985,

but it is felt that the particular items cited in this reprogramming action and one earlier are needed to allow the division the capability to test those items, to determine whether they are high quality candidates for inclusion into the high technology light division for 1985.

Mr. DICKS. Will the Chairman yield briefly?

I think that is an important point. There are two programs. There is the high technology light division and there is the high technology test bed program, in which they are testing out new innovative concepts of off-the-shelf equipment, all kinds of things that might go into a prototype light division, and I think the General put it very well.

Not everything that they test is critical to the fielding of the division by 1985. In fact, you are going to have, as I understand the program, three light divisions, by 1988, and so there is an ongoing test program that goes along with the establishment of a high technology light division. Is that it?

General DAVIS. That is fairly stated, Mr. Dicks.

Mr. ADDABBO. What is the project total development cost for the smart munitions?

Colonel MATSON. The figures programmed at this time are approximately 80 to 90 million dollars through 1987.

General DAVIS. We will provide the specific amount for the record.

[The information follows:]

At. this time the Army anticipates the total development cost to be $86.9M through 1987.

LIGHT WEIGHT AIR DEFENSE SYSTEM

Mr. ADDABBO. The Army is also requesting fiscal year 1983 RDT&E funds to start a new light weight air defense system, beginning with the study of alternatives including whether the system should be a gun or a missile system. Does this reprogramming mean that the Chaparral has been chosen before a study was made?

Major MIGGINS. Sir, the last program that was shown to Congress last year, at least in fiscal year 1983, had not made a final determination as to whether it was going to go to a gun or missile system. Since that time in the ongoing evaluation of alternatives, it was decided as with the heavy division that we needed a gun/missile mix. The intent for the light division is to stay with the Chaparral missile as part of the missile system. In order to provide a gun system with the ranges necessary, and compatible with the operational concept of that division, it was decided that a gun was necessary, and the last program evolved into that. Right now I believe that the alternative that is being considered is a derivative of the DIVAD gun, probably a single barrel 40 mm gun that we hope will fill that requirement, and this program that you see in front of you initiates that attempt.

Mr. ADDABBO. Supply for the record what analysis was done to support the choice of the Chaparral over the other, what missile guidance this towed Chaparral will employ and when will that be

available? Did the Army give any consideration to using the existing and immediately available Rapier system for this requirement?

General DAVIS. We will provide that for the record, Mr. Chairman.

[The information follows:]

(1) The April 1982 Lightweight Air Defense System (LADS) Study candidates were limited to existing or programed Army systems to minimize the increase in support and maintenance required and to meet an early initial operating capability (IOC) date. The requirement was to select a system to replace the towed verison of the VULCAN Gun System for the light divisions. The current Light Division Air Defense Battalion consists of self-propelled CHAPARRAL and towed VULCAN.

(2) Those systems considered were CHAPARRAL, STINGER, SGT YORK (DIVAD) and ROLAND. These systems are all short range division air defense systems, currently in the U.S. inventory, which can support the maneuver elements of the Light Infantry Division. IHAWK was not considered because it is a medium range, area air defense system, not designed to be integrated into a light division providing close-in air defense for maneuver elements.

(3) RAPIER was evaluated in earlier studies and determined to be no more effective than U.S. Systems. With at best equal effectiveness at a higher cost, and requiring a completely new maintenance/logisitics/support and training system, RAPIER was eliminated and not considered as a candidate system for the LADS Study.

(4) The 40mm modular derivative of DIVAD was chosen as LADS because it was the most effective system given the threat and mission. The existence of missile systems (STINGER and CHAPARRAL) in the light division amplified the need for the 40mm derivative to provide the gun-missile mix needed in the division.

(5) The missile component of the light division, the self-propelled CHAPARRAL, is too expensive in terms of strategic airlift requirements to support light divisions. The CHAPARRAL is not transportable by Army Helicopters, while the elements in the light divisions are. The development of the towed CHAPARRAL will reduce the strategic airlift requirements and provide increased tactical battlefield mobility.

(6) The 9th Infantry Division (9ID), which is developing the High Technology Light Division (HTLD) for the U.S. Army, played an instrumental role in establishing the above requirements for LADS and towed CHAPARRAL. They have been directed to develop a HTLD which includes the development of an operational and organizational concept with emphasis on improved strategic deployability. From this effort the requirement for LADS and towed CHAPARRAL evolved.

Mr. ADDABBO. Also provide for the record answers to the following questions concerning towed Chaparral, light weight verison of DIVAD, and modular mine pack system.

[CLERK'S NOTE.—The questions submitted by Mr. Addabbo and the ansers thereto follow:]

TOWED CHAPARRAL

Question. Another project is to develop and test a towed version of the Chaparral air defense system.

How long will this project take, and how much will it cost?

Answer. Self-propelled Chaparral is too expensive in terms of strategic airlift requirements for use with light divisions. To provide improved strategic mobility, Chaparral will be reconfigured into a towed system. The effort is two fold: (1) procurement of twelve heavy, 1200 lb towed systems and (2) development and procurement of a light, 6000 lb towed systems.

The heavy towed systems will be fabricated from self-propelled components. In support of the 9th Infantry Division's requirement to attain early improved strategic mobility, the heavy towed system will be fielded in 1985. Fabrication will cost $15.1M (fiscal year 1982 constant dollars).

The light, 6000 lb version will be developed to further reduce light divisions strategic airlift requirements and, by being Black

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Hawk liftable, to provide increased battlefield mobility. The light system will also be based upon self-propelled components. It will be initially fielded in 1987. The light Chaparral program cost is estimated at $75.3M (fiscal year 1982 constant dollars).

Question. The Army is also requesting fiscal year 1983 RDT&E funds to start a new Light Weight Air Defense System, beginning with a study of alternatives, including whether the system should be a gun or a missile system. Does this reprogramming mean that Chaparral has been chosen before a study was made? What analysis was done to support the choice of Chaparral over other alternatives?

Answer. To accelerate fielding of the critically required Lightweight Air Defense System (LADS), Training and Doctrine Command (TRADOC) conducted a study in the spring of this year to recommend the system to be developed as LADS. The study reaffirmed that for maximum effective short range air defense (SHORAD), a mix of gun and missile systems is required. Based on the study, the Army concluded a 40mm modular derivative of DIVAD should be developed as LADS to replace the inadequate VULCAN in the light divisions. It was also concluded Chaparral; should be lightened. Towed Chaparral will be an adaptation, primarily a repackaging, of the self-propelled system. The current Chaparral training and logistic support base will support towed Chaparral.

Question. What missile guidance will this towed Chaparral employ? When will that guidance be available?

Answer. When fielded, towed Chaparral will use the same missile as the self-propelled system. The current missile is fire and forget, supersonic, passive infrared (IR) homing with all-aspect guidance and some countermeasure hardening. Upgraded guidance with further, improved infrared counter-countermeasures to keep the missile current against the threat through the 1990's will be fielded in the late 1980's.

Question. What consideration has the Army given to using the existing and immediately available Rapier system for this requirement?

Answer. Rapier was evaluated extensively as a SHORAD all-weather candidate. Roland was selected as a more capable system.

Concerning Rapier as LADS, it was evaluated along with other systems during the spring and summer of 1981. The Army determined a number of the other system alternatives would be as good or better than Rapier as LADS. As Rapier Blindfire is a modular system, it requires three vehicles or a minimum of two helicopter sorties to move a fire unit. The major components must be interconnected with cables. The crew is fully exposed. The missile range and kill probability are only approximately equal to Chaparral. Introduction of Rapier into the inventory would require that another logistic and training support system be established.

At invitation, Army personnel observed Rapier in field training exercise Vingeful Merlin in Europe, in September 1981. The observation was conducted with a view toward Rapier as LADS. The observers reported Rapier did not meet user requirements for a forward deployed LADS. Long march order/emplacement time, limit-

ed mobility and no crew protection were sighted as significant shortcomings.

LIGHTWEIGHT DIVAD

Question. Another project in this reprogramming is a lightweight version of the DIVAD Gun. Why are both a new version of a gun and a new version of a missile system required? Why is one not sufficient, especially given the weight and mobility requirements of the HTLD?

Answer. Divisional, Short Range Air Defense (SHORAD) systems have proven to be much more effective when deployed in a mix. The weaknesses of one system are compensated for by the capabilities of another. For the past decade, the mix in the light divisions has been REDEYE, VULCAN and CHAPARREL. REDEYE and VULCAN are inadequate. We are in the process of replacing REDEYE with STINGER. Based upon a Training and Doctrine Command (TRADOC) study, the Army has selected to develop a 40mm modular derivative of DIVAD as its Lightweight Air Defense System (LADS) to replace VULCAN. By adaptive engineering, CHAPARRAL will be configured as a towed system to improve its strategic mobility and make it more suitable for deployment with light divisions.

MODULAR MINE PACK SYSTEM

Question. Another project is to accelerate development of the Modular Pack Mine System (MOPMS), which Army documentation already shows will be type classified in fiscal year 1984. Why does it need to be accelerated if HTLD needs it in fiscal year 1985?

Answer. MOPMS will be type classified in fiscal year 1984. Acceleration could permit initial procurement in fiscal year 1984 with IOC in fiscal year 1986 rather than in fiscal year 1987 as currently planned.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

MK-19 MACHINEGUN

Mr. ADDABBO. Another project is to evaluate the MK-19, which is a 40 mm. machinegun developed for the Marines. The Marines are already evaluating the MK-19. Why must the Army test it also?

Colonel ELLIOTT. This is the testing that I described earlier. The Navy and Marine Corps are going to conduct tests. However, to some extent their tests will not cover all of the things that we would need covered for the Army. What we need to do is monitor their testing first of all to glean what information we can from it, and also determine what additional testing might be necessary for the Army. These funds are to be used specifically to monitor the testing by the Navy and the Marine Corps, and to develop our program.

Mr. ADDABBO. You may or may not know that the Army has already submitted another reprogramming for funds to actually procure the MK-19. Why would the Army still have to be testing, if they have already made a decision to buy?

Colonel ELLIOTT. Sir, we know that the system is a good system. It is approved for service use by another service. It is necesary for us to procure these through the Navy, in order to meet the requirements for fielding the 9th Infantry Division as necessary, we are having to try to compress our own time to look at the system. This requires us to look at their testing and conduct our own testing as necessary, but at the same time take steps to procure from the Navy. If we don't do that, we cannot execute the program.

Mr. ADDABBO. When will the testing be completed?

Colonel ELLIOTT. Sir, the Marine Corps and the Navy testing, as I understand it, is to be completed in the November time frame of this year.

Mr. ADDABBO. This will tell us if the testing is satisfactory.

FUNDING FOR PROPOSED PROJECTS

Provide for the record the total estimated funding which eventually will be needed in this proposed program element for each of the eight projects. Provide for the record a schedule for each of the eight projects.

General DAVIS. We will do that, Mr. Chairman.

[The information follows:]

Mr. Chairman, the outyear funding is subject to change, but the following information is the Army's best estimate of costs at this time. Please note that the costs provided are strictly for the HTLD program element.

Mark 19 40mm Machine Gun.—Total RDTE costs are limited to the fiscal year 1982 reprograming action of $0.25 million. We expect to field the division's requirements by 1985.

Light Air Defense System (LADS).—Funds for the basic LADS program are currently included in the fiscal year 1983 request as a separate program. Current plans are to accelerate the program for HTLD by adding $77.0 million in fiscal years 1982-1984 in the HTLD program. Savings of $45.5 million will be reflected in fiscal years 1985-1988 for the basic LADS. The acceleration is expected to provide HTLD deliveries in fiscal year 1987 instead of fiscal year 1989.

Towed CHAPARRAL.—Total program costs are $52.7 million with interim prototypes available to the division in 1985.

Deception Devices.—The cost of this program is estimated to be $19.7 million with most of the devices available in 1985. The development of some would extend beyond that time frame.

4.2 inch Mortar Modification.—It is the intent of the Army to conduct this program in two phases. First to modify the weapon and improve ammunition to provide a highly mobile improved range system by fiscal year 1985. We then intend to continue development of the mortar and ammunition to provide the required range of 8,000 meters and to enhance its flexibility by adding munitions. We currently estimate $62.1 million for the effort.

4.2 inch Smart Munitions.—This program was mentioned earlier. We estimate that it will cost $86.9 million for the development with an IOC of 1987. We expect a limited number of rounds to be available to the HTLD by 1985.

Volcano Universal Mine Dispensing System.—Volcano is projected to cost this program element $53.7 million in order to accelerate the existing program. Prototypes will be made available to the HTLD by 1985 with the remainder of the Army receiving it in 1987 and beyond.

Modular Pack Mine System.—A total of $5.2 million is required in this program to keep it on track with an availability of 1987.

SOURCE OF FUNDS

Mr. ADDABBO. The sources of funds for this reprogramming are the Cobra/TOW, $12,150,000, and Chapparal, $3 million. Why are funds being taken out of the Chapparal program so that they can be spent on the Chapparal project in this program?

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General DAVIS. Because of revisions in the Chapparal program there is no significant impact in pulling these funds and using them for the high technology light division.

Mr. ADDABBO. Please answer for the record the following questions concerning sources of funds.

[CLERK'S NOTE.—The questions submitted by Mr. Addabbo and the answers thereto follow:]

Question. The sources of funds for this reprogramming are COBRA/TOW ($12,150,000) and CHAPPARAL ($3,000,000). Please explain why work on modernizing the COBRA/TOW is being delayed?

Answer. The $12.15 million was decremented from COBRA/TOW RDTE program designed to develop and integrate a night/obscured battlefield condition target acquisition sensor and to modify the existing TOW missile system accommodating the TOW 2 missile. The Army has completed preliminary engineering analysis and configuration definition but decided not to proceed with full scale engineering development until after completion of an on-going evaluation on how best to increase the overall operational capability of the current AH-1 fleet. This evaluation is scheduled for completion by January 1983 at which time the Army will decide on an overall COBRA modernization program, including a night capability and performance upgrades.

Question. What effect will this delay have on availability of a modernized night fighting COBRA?

Answer. Assuming that the January 1983 Army review results in a favorable decision to modernize COBRA including night capability night fighting COBRAs could be available by end of fiscal year 1987.

Question. Why are funds being taken out of the CHAPARRAL program?

Answer. Towed CHAPARRAL is being established as a new program element. Due to the delay in the development start of improved, countermeasures hardened missile guidance for CHAPARRAL, it is possible to make $3.0 million available from the guidance development program to initiate development of the towed version of CHAPARRAL.

[CLERK'S NOTE.—End of questions submitted by Mr. Addabbo.]

Mr. ADDABBO. The gentleman from Alabama.

Mr. EDWARDS. I have no questions, Mr. Chairman.

Mr. ADDABBO. The gentleman from Washington?

HTLD CONCEPT

Mr. DICKS. General Davis, I compliment you on your willingness to take the approach to develop a structure for a new generation light division.

The technique of applying new ideas and tactics and doctrine, seeing how existing items can be adapted to their application and then testing both in real world situations is one that in my judgment will not only reduce research costs, but will dramatically cut down on the long lead times for developing new equipment and will make sure the equipment we develop is right for the way the

Army plans to operate. I frankly wish the other services would follow your example.

So as I understand it, this program is not directly comparable to standard research and development programs. The intention is to take existing systems and programs and see if they can be adapted to the actual needs of the light division, isn't that correct?

General DAVIS. That is correct, Mr. Dicks.

Mr. DICKS. If we tried to do this through a standard R&D program for every initiative, wouldn't it take far longer and cost much more?

General DAVIS. It would take far longer and undoubtedly cost far more.

Mr. DICKS. Can you describe some of the initiatives already undertaken in the high technology light division program, what lessons we have learned, and whether they could have been accomplished without this unique program approach?

General DAVIS. I could do that for you, Mr. Dicks, and I would prefer to give it fair treatment. Rather than recalling from my several trips to Fort Lewis, I would prefer to to provide that for the record.

The information follows:

The High Technology Test Bed (HTTB) has undertaken a number of initiatives ranging in scope from strategic deployability to human dimensions. For example, in the area of strategic deployability the HTTB developed a system to load outsized cargo such as Command Post vans into C141 aircraft. The system required the modification of the vehicle allowing the van body to be detached from the truck's body. Teflon strips are added to the bottom of the van and the truck chassis, enabling the van to be winched off the truck's chassis and into the aircraft. The truck is then able to be loaded into the same aircraft. In the area of battlefield surveillance, the HTTB is experimenting with a long range electro-optic device which can identify an upright human at 35 kilometers in normal daylight. The system is a unique combination of off-the-shelf video tape and light powered optical telescope equipment. The prupose of this effort is to concurrently validate a materiel requirement and an operational concept thus compressing the requirements documentation process leading to an earlier acquisition decision. This particular program illustrate's the HTTB's effort in coordination with TRADOC and DARCOM, to speed up the acquisition process in order to meet the fielding requirements of the High Technology Light Division. If this initiative proves successful it could have a significant impact on improving the acquisition cycle. Through the HTTB the Army has focused the efforts of TRADOC, DARCOM, and FORSCOM to develop and validate the operational and organizational concepts and the materiel requirements of the emerging High Technology Light Division. In addition, the Army is working closely with the U.S. Air Force and U.S. Marine Corps both of which services have established full time liaison offices with the HTTB at Ft Lewis. Allied nations have been invited and are also participating in this force development program. As such, the High Technology Test Bed provides the Army with a unique means to accelerate the development, testing, and incorporation of new initiatives to significantly improve the combat capabilities of our most strategically deployable units, the light infantry divisions.

Mr. DICKS. That will be fine. Is the Army satisfied thus far with the high technology light division program?

General DAVIS. We are very satisfied and in fact excited by the progress from what we have seen.

Mr. DICKS. As I understand it, General Myers is going to be out there this week.

General DAVIS. That is what I have heard, sir.

Mr. DICKS. Because the high technology light division is somewhat experimental in nature, and we can't be sure what will prove

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worthwhile long in advance. It is difficult to provide precise budget requirements within the long traditional lead times, isn't that correct?

General DAVIS. That is also correct, Mr. Dicks.

Mr. DICKS. A number of the initiatives included in this reprogramming are intended to provide effect of modern equipment that can be more easily transported than standard models. For the Chairman's information, everything that will be in the light division could go in a 747.

Mr. HEFNER. Broken down or packaged?

Mr. DICKS. Will fit in right through the side door.

Mr. DICKS. Is reducing the difficulty to move the infantry division a high priority goal of the high technology light division?

General DAVIS. It is, Mr. Dicks.

Mr. DICKS. Won't this provide improved battlefield flexibility and reduced dependence on limited and high cost airlift—that is, the C-5 by the way—for the light division of the future?

General DAVIS. It will for the light division, Mr. Dicks.

Mr. DICKS. You state failure to approve the reprogramming will make it impossible to field a prototype division by fiscal year 1985. Won't it also add to the ultimate cost?

General DAVIS. It would, Mr. Dicks.

Mr. EDWARDS. Can you put all that high technology and high mobility and high cost, all in a high airplane?

Mr. DICKS. Yes. That is all.

Mr. ADDABBO. Any further questions?

Thank you very much, General, for your frankness and decisiveness and we also want to commend all your back-up Colonels and Majors.

General DAVIS. Thank you, Mr. Chairman.

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96-942 O - 82 - 50

WITNESSES

	Page
Adams, M. C	455
Allen, Gen. Lew	1
Anderson, John	733
Andreson, Capt. R. K	597
Bernard, C. W	455
Borsting, Hon. J. R	597
Bowden, Brig. Gen. W. P	455
Burbules, Brig. Gen. P. G	455
Burke, Lt. Gen. Kelly	1
Carlucci, F. C	1
Carson, Brig. Gen. W. G., Jr	455
Chen, Col. W. F	455
Compton, Rear Adm. B. W., Jr	261
Connor, Henry	351
Cooper, R. S	161
Corbett, Lt. Col. J. D	711
Cowhill, Vice Adm. W. J	1
Culosi, S. J	455
Dausman, G. E	597
Davis, Brig. Gen. H. M., Jr	689, 711, 733, 738, 746
De Lauer, Richard	381
Elliott, Lt. Col. C. B	746
Evatt, Col. J. W	381
Fornell, Brig. Gen. G. E	597
Frost, Lt. J. J	455
Fulwyler, Maj. Gen. N. J	261
Garant, R. G	720
Gilroy, Robert	573
Gold, T. S	261
Goncz, Col. J. P	711
Grove, M. H	161
Hannan, Col. R. D	711
Harmon, Col. K. T	689
Helmer, Richard	351
Henderson, John	573
Hill, Lem	161
Howard, Lt. Col. B. J	746
Jones, Capt. R. C	689
Jones, T. K	381
Kaminski, Col. P. G	381
Kelly, Gen. P. X	1
Lasser, M. E	161
Long, W. A	597

	Page
MacDonald, Michael	261
Manweiler, Howard	738
Mays, Capt. G. G	455
Metcalf, Col. C. D	689
Miggins, Maj. M. D	746
Miller, Rear Adm. R. A	597, 689, 711, 720
Nicolai, Maj. V. R	261
Oxley, Roy	455
Randolph, Brig. Gen. B. P	597
Rittenhouse, Lt. Col. W. R	746
Roberts, Paul	573
Russ, Maj. Gen. R. D	381
Sansone, Rear Adm. J. S	597
Seggel, L. R	597
Skibbie, Maj. Gen. L. F	455
Smith, J. A	161
Thompson, Lt. Gen. R. H	1
Tietge, Brig. Gen. J. W	261
Trodden, S. A	597
Webster, R. D	455
Willaims, C. O	161
Williams, Priscilla	351

INDEX

	Page
AMMUNITION PROGRAMS	455
AH-64 attack helicopter, 30mm ammunition for	557
Airfield attack weapon, Air Force	483
Alternative testing program	546
Ammunition procurement bow wave	488
Anti-tank rounds	492
Care and maintenance of ammunition	496
Accounting for Navy ammunition	507
Air Force storage facilities in Europe	503
Inadequate storage facilities	497
Insufficient Army storage facilities in Europe	503
Lack of Navy ordnance specialists	508
Maintenance backlog	505
CBU-90 antiarmor cluster munition (ACM), Air Force	565
Contract costs, fiscal years 1982 and 1983	538
Copperhead:	
Cost	537
Cost growth	541
Marine Corps procurement of	539
Priority	536
Production and delivery schedule	536, 544
Projectile	535
RDF	539
Reliability	543
Defense consolidated guidance	485
Cost of complying with	485
Maintenance backlog	490
Production base	491
FMU-139 fuze, Air Force	563
Handgun procurement, 9mm	471
High explosive antitank round	555
Inventory object, cost to procure	540
Israeli antiarmor weapons	491
Israeli B-300 bunker buster	493
Laser guided bomb kits, Air Force	567
Light antitank weapon, Marine Corps	477
Light antitank weapon, requirements document for	549
Marine Corps ammunition procurement budget	560
Maverick missile	494
Navy 5"/54 ship gun ammunition	562
Production base expansion and modernization program	531
Automated lines with computers	533
Cost to correct deficiencies	532

AMMUNITION PROGRAMS—Continued
Production base expansion and modernization program—Continued Page
Quality of layaway after Vietnam 534
Production base support and modernization program 531
Rocket assisted projectile (RAP), 155mm 554
Sabot target practice round, 105mm, discarding 559
Sense and destroy armor 495
Single manager for conventional ammunition 471, 509
Acceptance of 473
Economies and efficiencies from SMCA office 513
Further changes to SMCA directive 514
Integrated ammunition plan 472, 544
Organization of single manager's office 509
Personnel in single manager's office 510
Responsibility of single manager 511
SMCA directive 5160.65 516
SMAW 479
Statement of Dr. Adams 462
Statement of Dr. Webster 468
Summary statement of Dr. Webster 466
Tank gun ammunition, 120mm 552
Target practice round 557
Training ammunition (small arms), packaging from 569
Training ammunition, separate budgeting for 569
VIPER 545
Alternatives testing 481
Antitank rocket 474
Production facilities 551
Program review 480
Weight 475
War reserve stockpile, current 486

B-1 COST ESTIMATES 327
Airframe Cost 337
B-1B avionics 337
Baseline estimate, what's included in the 330
CAIG estimate, difficulty of acquiring 347
CAIG report, timing of 329
Cost estimate, items not included 342
Credibility of the Air Force 345
Flight testing time 336
Introduction 327
Multiyear procurement 339
Summary statement by Mr. Day 328
Then-year dollar projection of $400 million per plane 330
Timing of CAIG report 329

CHEMICAL WARFARE PROGRAMS 261
Bigeye bomb production 288, 294
Bigeye production facilities 309
Binary weapon production facilities 289
Binary chemical weapons, deployment of 295
Biological and chemical weapons, difference between 279
Chemical agents, types of 282

CHEMICAL WARFARE PROGRAMS—Continued

Page

Chemical warfare:
- Defense capabilities program 307
- Defense equipment 309
- Policy 276
- Program, Navy 303
- Programs in OSD, organizational changes 275
- Soviet, lack of information on 278
- R. & D. for 324

Chemical weapons:
- Delivery systems for 283
- Demilitarization of 300
- Detections 299
- Hatfield amendment on 292, 302
- Production, industry interest in 291

Equipment:
- Chemical protective 286
- Protection 305
- Status, chemical defense 307

GB-2 Artillery projectile production 289
Introduction 261
M-51 protective shelter 317
Organizational changes in OSD 275
Poison gas in World War II 317
QL Chemical Production Facility 293
QL, industrial base for 291
Statement by the Deputy Assistant to the Secretary of Defense (chemical matters) 263
Summary statement by Dr. Gold 270
U.S.S.R., Status of negotiations with the 277
U.S.S.R., use of chemical/biological weapons by 279
XM-30 protective mask 319

MULTIYEAR PROCUREMENT:

Department of Defense 597
- A-6E multiyear procurement 638
- ALQ-136 jamming system 676
- Appropriation act multiyear procurement language 665
- B-1 bomber 662
- Blackhawk multiyear procurement 636, 637
- C-2 DOD aircraft program 650
- C-5B multiyear procurement 652
- Candidates for fiscal year 1983 664
- CH-53E multiyear procurement 638
- Completed contract method of accounting 668
- Contract type 679
- Contracts and controllability of the Defense budget 669
- Criteria 628
- Defense meteorological support program (DMSP) 683
- Degree of confidence in estimates 664
- Degree of cost confidence 680
- Discounting—considering the time value of money 664
- Discounts savings 633
- DOD and departmental reviews of multiyear candidates 621

MULTIYEAR PROCUREMENT—Continued

DEPARTMENT OF DEFENSE—CONTINUED — Page

DOD discounting procedures ... 624
Escalation avoidance not considered savings ... 645
Global positioning system ... 686
Increasing competition ... 648
Industrial base/competition, multiyear impact on the ... 629
Industrial base enhancements ... 681
Is advanced procurement under multiyear contracting being abused ... 667
Is Congress losing flexibility ... 665
KC-10, lack of budget amendment for ... 658
KC-10 multiyear procurement ... 653
KC-10, procurement profile ... 656
Lack of alternative for the committee ... 659
Little confidence in predicted savings ... 622
LSD-41 multiyear procurement ... 662
MK-46 torpedo ... 637, 682
Major system multiyear procurement contracts ... 632
Modular universal laser equipment ... 679
Multiple launch rocket system (MLRS) ... 640, 671
Previous procurement plan for MLRS ... 641
Multiyear payoffs, the fiscal year 1982 ... 665
Multiyear procurement criteria ... 621
OSD review of multiyear candidates ... 646
Previous procurement plan for MLRS ... 641
Prioritization of multiyear proposals ... 622
Proposal to strike appropriation act language requiring specific approval of multiyear contracts for major weapon systems in appropriation acts ... 666
Request for multiyear proposals ... 651
Savings, proposed ... 680
SM-1 standard missile ... 636
Second sourcing versus multiyear for MLRS ... 642
Stability of requirement ... 681
Standard missile ... 681
Statement by Assistant Secretary of Defense (Comptroller) ... 598
Statement by Brig. Gen. Bernard P. Randolph ... 619
Statement by Brig. Gen. Gordon E. Fornell ... 617
Statement by Deputy for Materiel Acquisition Management ... 613
Statement by Rear Adm. Richard A. Miller, U.S. Navy ... 614
Summary ... 663
Summary statement by Dr. Borsting ... 607
TAO fleet ... 661
TAO multiyear procurement ... 625
Termination liability ... 639
Type of multiyear contracts ... 646

GENERAL ACCOUNTING OFFICE ... 573
Accounting, completed contract method of ... 590
Alternative contracting methods, comparison of ... 593
Approval criteria ... 576
B-1 multiyear contract ... 589, 594
Cancellation costs ... 594
Cautious approach to multiyear contracting ... 589
Competition, enhancement of ... 589

MULTIYEAR PROCUREMENT—Continued
GENERAL ACCOUNTING OFFICE—CONTINUED
Page
Cost confidence, degree of 578
Discounting, present value 583, 586
Firm quotas needed 588
Industrial base, enhancement of the 590
Introduction 573
Savings, assessment of DOD's claimed 591
Savings (DOD) not discounted 578
Savings, estimated 592
Savings estimate, comparison of 581
Summary statement of Mr. Gilroy 574
Test period needed 590

NAVY'S MANAGEMENT OF DEFECTIVE GOVERNMENT FURNISHED EQUIPMENT 351
Costs associated with defective material 371
Defense Acquisition Regulations, Impact of 365
DOD policy and regulations 372
General Accounting Office:
Conclusions 365
Recommendations 378
Government furnished materiel:
Accountability for defective materiel 368
Contractors filing defective GFM reports 363
Costs associated with defective equipment 371
DOD policies and regulation addressing defective GFM 362
Examples of Government-furnished equipment found to be defective 370
Navy guidelines on defective GFM 362
Responsibility and accountability of defective GFM 374
Insurance coverage 368
Internal audits by DOD 373
Introduction 351
Navy comments on the draft report 376
Reporting systems to address problem 376
Scope of work 369
Statement of Mr. Connor 355
Summary statement of Mr. Connor 351
Terminating business with poor vendors 367

REPROGRAMINGS, FISCAL YEAR 1982 689
ARMY:
Firing port weapon for the IFV 754
Statement by Brig. Gen. Harold M. Davis 754
High Technology Light Division 775
Funding for proposed projects 784
HTLD concept 785
Lightweight DIVAD 783
Lightweight air defense system 780
MK-19 machinegun 783
Modular mine pack system 783
New programs 778
"Smart" mortar round 779
Source of funds 784

REPROGRAMINGS, FISCAL YEAR 1982—Continued
ARMY—CONTINUED
High Technology Light Division—Continued Page
Statement by Brig. Gen. Harold M. Davis ... 775
Towed Chaparral ... 781
M1 tank ... 758
Statement by Brig. Gen. Harold M. Davis ... 758
M198 155mm towed howitzer ... 746
Statement by Brig. Gen. Harold M. Davis ... 746
M240 7.62 armor machinegun ... 751
Statement by Brig. Gen. Harold M. Davis ... 751
MK 19-3 40mm grenade launcher ... 764
Statement by Brig. Gen. Harold M. Davis ... 764
Source of funds ... 768
National Guard personnel unit and individual training ... 738
Introduction ... 738
Questions/answers ... 745
Source of funds ... 743
Statement by Brig. Gen. Harold M. Davis ... 738
Reserve personnel unit and individual training ... 733
Introduction ... 733
Purpose of reprograming request ... 736
Statement by Brig. Gen. Harold M. Davis ... 733
VIPER ... 770
Statement by Brig. Gen. Harold M. Davis ... 770
NAVY:
Military personnel, Navy—appropriation underfinancing ... 720
Cost savings in missile procurement account ... 730
DDG-2 class ship ... 730
Infrared detecting set ... 729
Introduction ... 720
Purpose of the reprograming ... 727
Realignment of OPN programs ... 731
Source of funds ... 729
Statement of Rear Adm. Richard A. Miller, USN ... 720
PUBLIC LAW 97-60 ENTITLEMENTS ... 689
Consecutive overseas tours ... 709
Funded emergency leave travel ... 704, 709
Funded environmental and morale leave travel ... 704, 706
Funded travel for consecutive overseas tours ... 705
Introduction ... 689
Reprograming 82-45PA, O. & M., Army ... 690
Reprograming 82-46PA, O. & M., Marine Corps ... 698
Reprograming 82-47PA, O. & M., Navy ... 694
Reprograming 82-48PA, O. & M., Air Force ... 701
Source of funds ... 709
Statement by Captain Jones ... 704
Statement by Col. D. Metcalf, USAF ... 700
Statement by Rear Adm. Richard A. Miller, USN ... 693, 697
Table summarizing request by program and services ... 705
Temporary storage of household goods (in excess of 180 days) ... 704, 708
PROCUREMENT OF ARMORED SEDANS ... 711
Introduction ... 711

REPROGRAMINGS, FISCAL YEAR 1982—Continued
PROCUREMENT OF ARMORED SEDANS—CONTINUED
Letter from Deputy Under Secretary of the Navy (Financial Management) to Chairman Addabbo, dated July 19, 1982 ... Page 712

RESEARCH AND DEVELOPMENT TECHNOLOGY BASE ... 161
Basic research, duplication of ... 233
Budget, establishing size of technology base ... 217
Budget, growth in technology base ... 240
DARPA's basic research budget ... 228
DARPA's budget request ... 242
Defense Nuclear Agency ... 247
Defense Advanced Research Projects Agency, statement of ... 162
DOD Laboratories, personnel of ... 252
DSB study of tech base ... 231
Economic problems, current ... 228
Education, Federal aid to ... 212
Foreign scientists at U.S. universities ... 260
Funding:
Army technology base ... 224
Basic research ... 220
DOD labs, methods of ... 253
Past technology base ... 225
Percentage increases in technology base ... 218
Future requirements, linking research to ... 230
High technology, problems generated by ... 238
In-House facilities and equipment, upgrading ... 255
In-House laboratories:
Differing opinions on ... 234
Plan to improve ... 235
Relevance of ... 251
Quality of ... 234
Introduction ... 161
Investments in technology, U.S. and U.S.S.R ... 215
Lead laboratory concept ... 256
Level of effort ... 242
Manpower, engineering and scientific ... 210
Military relevance, legal requirements concerning ... 246
Navy graduate fellowship program ... 213
Overview ... 236
Remarks of Dr. Cooper ... 204
Remarks of Mr. Grove ... 206
Research and development ... 161
Research and development, tech base as a percentage of total ... 222
Research, objectives, documentation of ... 245
Research, avoiding redundancy in basic ... 244
Research results, open publication of ... 259
Reprograming funds ... 243
Salaries, engineers' ... 214
Soviet R.D.T. & E. Efforts ... 210, 239
Statement of H. Mark Grove ... 168
Statement of Dr. O. Charles Williams, Jr ... 196
Student education, support for ... 215
Studies—past and present ... 235

RESEARCH AND DEVELOPMENT TECHNOLOGY BASE—Continued Page
University involvement 256
University laboratories, equipment at 257

STRATEGIC AIRLIFT 1
Accuracy of claims in Dear Colleague letters 131
Airfields which can accommodate C–5's, 747's, and KC–10's 152
Airlift:
Current status in Congress of DOD's proposals 140
Outsize capability problem 125
Production program 124
Requirements 112
Scenarios 80
Vis-a-vis sealift vis-a-vis pre-positioning 56, 81, 133
ASD corroborated Boeing cost estimates 124
Bailout legislation 84
C–5:
And CX 58
Changes to 82
Cost factor problems 107
Cost comparison vs. 747 101
Decision 44
IOC and FOC of C–17 and 42
Items carried on 116
Maintenance per hour 90, 151
Outsize requirements 132
Peformance problems 110
Productability problems 108
Production line 44
Rewinging 91
Surge tests 87
Versus 747 63
C–5 vs. 747—loading and unloading 70
C–5 vs. 747 costs 72, 101
C–5A problems 85
C–5B:
Clarification on recent testimony 143
Meeting delivery dates for aircraft and engine 149
Need for 50 additional 130
Outlay difference vs. 747 124
C–17:
Air Force briefing to Secretary Carlucci 96
Stretch-out 42
Contracts, Lockheed and Boeing 73
Cost comparisons 85
CRAF:
747's 114
Enhancement plans 69, 128
Program 124, 153
Criteria used in CMMS study 139
CX unobligated balances 62
DOD airlift program 70
Equipment:
Oversize and outsize 44

STRATEGIC AIRLIFT—Continued
Equipment—Continued
Page
Required to establish air superiority 88
Timeframe for delivery of "outsized" 135
Types of for airlift 74
Firmness of costs and contracts 139
Fuel consumption computations 94
Increased costs of weapon systems 72
Introduction 1
IOC and FOC of C-5 and C-17 42
KC-10:
Capability 90
Production history 155
Length of time to deliver aircraft 126
Life cycle costs 61
Meeting delivery dates 78
NATO Scenario for airlift needs 158
Plane to move outsize cargo 84
Priorities, strategic airlift 132
Revisions to defense budget 56
Runway lengths 76
747's:
Clarification of recent testimony of the proposal 144
Converted to Air freighters 85
Cost comparison with C-5 101
Costs 68, 92
Differences in outlays in fiscal year 1983/85 vs. C-5B buy 124
Items carried on 116
MAC loading test 129
Military utility limitations 129
Modifying of 83
Number of "surplus/used" 126
Secretary Carlucci's opening comments 3
Senate vote on Boeing options 151
Shortfall in outsize strategic airlift 130
Statement by Secretary Carlucci 5
Status of comprehensive long-term airlift acquisition plan 160
Survivability of airlift and sealift 57
Used plane market 157

STRATEGIC MANNED BOMBER AND RELATED WEAPONS 381
CED and CIP 408
Cost analysis group 428
Cost sharing 416
Credibility of witnesses 422
Cruise missile carriage, cost of 448
Defensive avionics 447
Depot support of B-1B 432, 443
Differing cost estimates 390, 402
EMP testing of B-1 441
Engineering changes, cost of 440
Engineering change orders 407
Estimate, choosing the lowest 391
Extras for B-1B 393

STRATEGIC MANNED BOMBER AND RELATED WEAPONS—Continued Page
Fatigue article testing, B-1 438
Flight testing, B-1 451
Follow-on mission needs 431
Funding outside the B-1B program 445
GAO access to B-1B costs 433
Government-owned property, use of 446, 453
Hardness 402
Increased costs for weapons 417
Initial spare parts for B-1B 452
Intelligence reports 433
Independent OSD analysis worst case?, is the 426
IOC of the B-1 413
Learning curve 399
Letter from the Congressional Budget Office to Chairman Addabbo dated July 27, 1982 420
Letter from the Deputy Secretary of Defense to the Secretary of the Air Force dated November 4, 1981 412
LF/VLF radio for B-1B 446
Modification of two B-1A's for the B-1B test program 434
Multiyear contracting 405, 424
Next generation cruise missile 429
Nuclear warheads and/or bombs be available for the numerous new weapons system?, Will 449
Organic depot capability/interim contractor support 442
Other added B-1 costs 396
Potential additions to B-1B 445
Savings from learning curves 437
Scope of contract for offensive avionics 447
Simulators as part of aircraft programs 394
Simulators for B-1 ..... 400, 436
Statement of Dr. DeLauer 387
Technical order pages 403
Testing program 404
Trestle test 407